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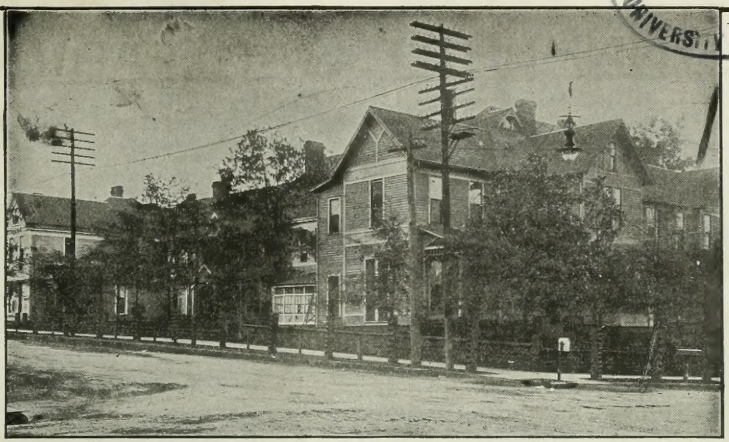

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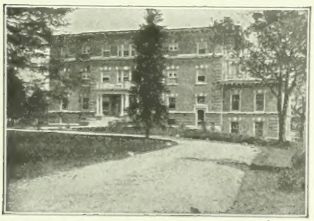

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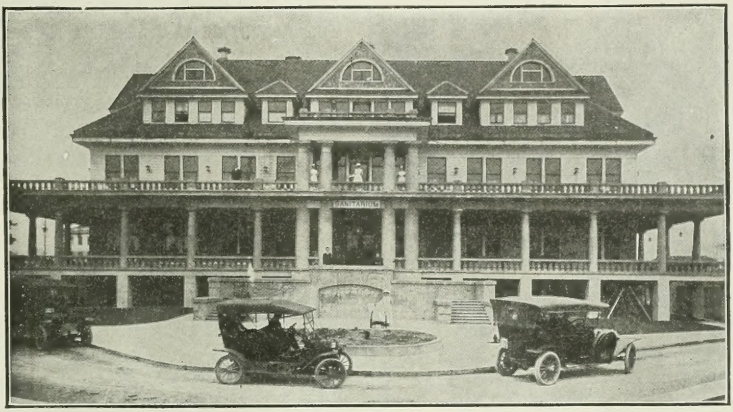

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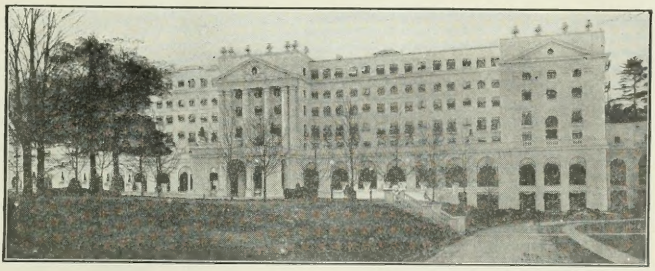

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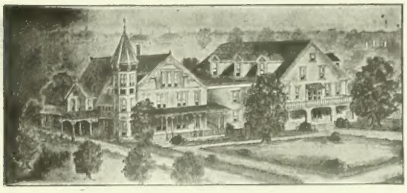

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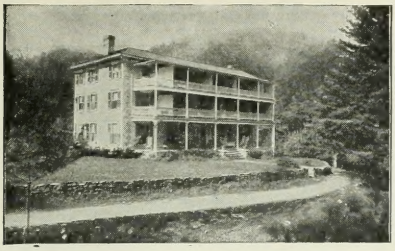

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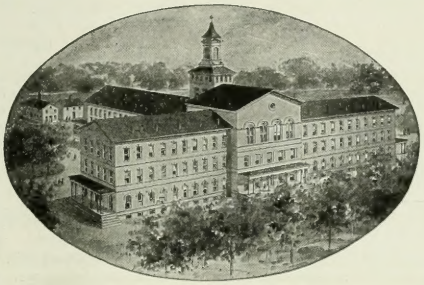

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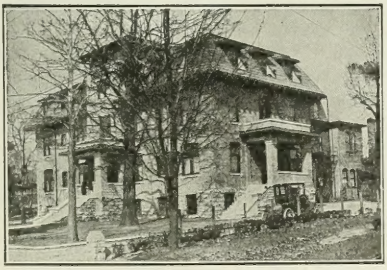

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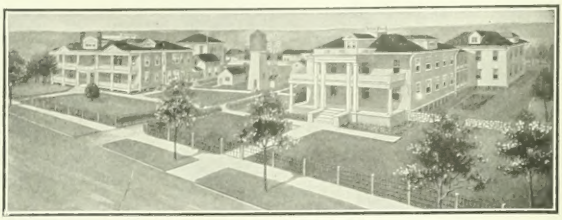

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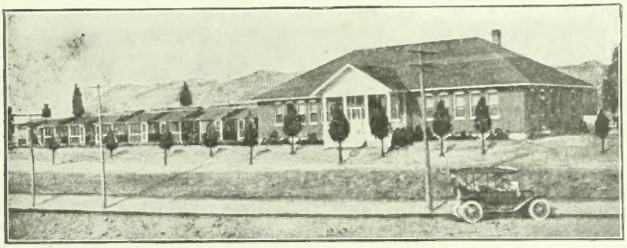

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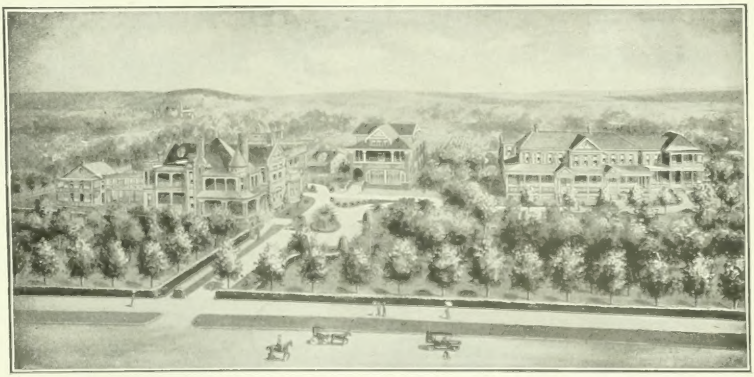

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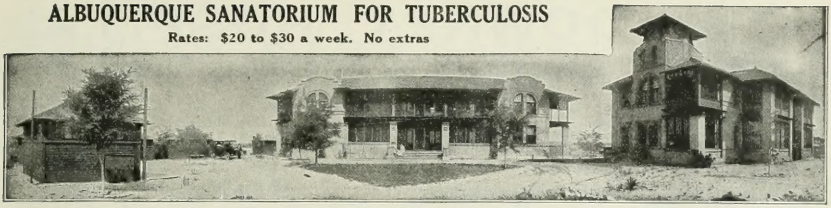

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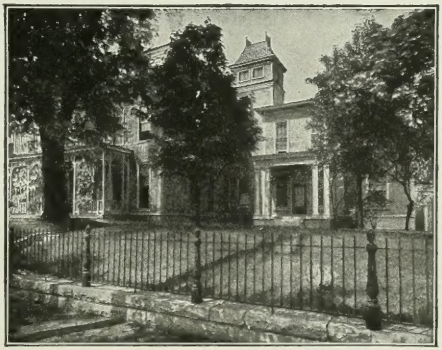

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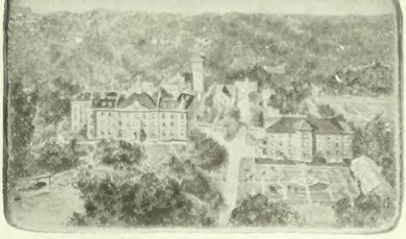

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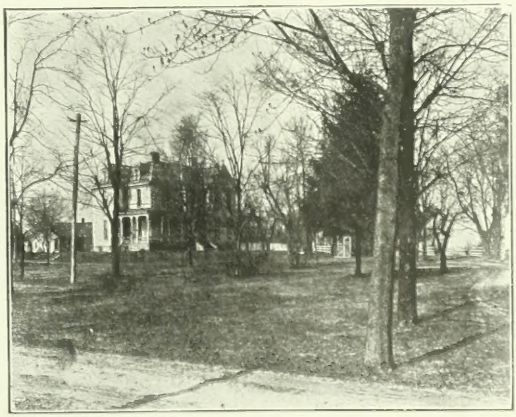

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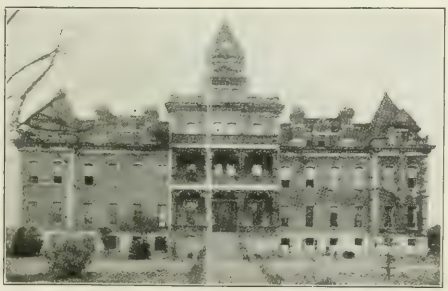

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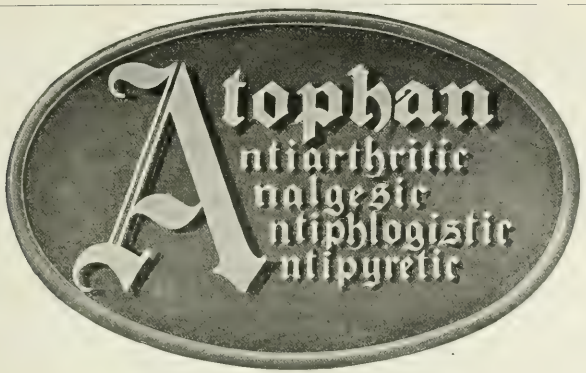

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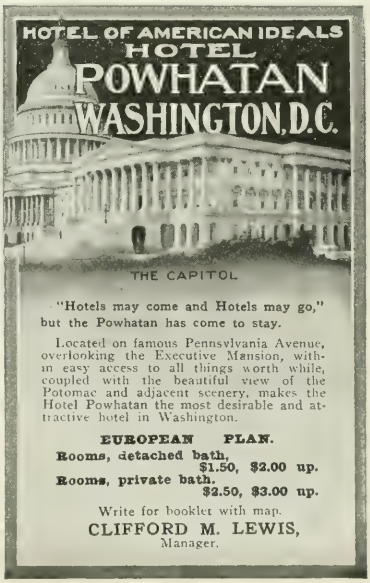

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ORIGINAL ARTICLES

SOME VIEWS ON THE ETIOLOGY OF PELLAGRA, BASED UPON THE EXPERIMENTAL INOCULATION OF MONKEYS AND RABBITS.*

By W. A. Dearman, M. D.,
Long Beach, Miss.

In a former announcement, read before the Harrison County Medical Society, which convened in Gulfport, Miss., February 4, 1913, I reported that I had been able to produce symptoms and clinical signs of pellagra in a black Honduranean monkey (domesticated), and exhibited the animal, showing almost all the typical signs of the disease.

Later, before the Mississippi State Medical Society, which convened in Vicksburg, April 8-10, 1913, I made a similar announcement, and abstracts were recorded in the minutes which appeared in the society proceedings, published in A. M. A., Vol. No. 60, May 10, 1913, p. 1845.

In this animal, which was fed a large piece of pseudo-membranous deposit, incorporated with saliva from a typical case of pellagra, the disease first manifested itself in the monkey after an incubation period of thirty-seven days. Briefly stated, the symptoms were complete anorexia, loss of spirits, no inclination to walk or climb in cage, sitting in a drooped position for hours without changing position. All these phenomena had not heretofore been observed. Apples, bananas, peanuts and sweet milk, of which the diet heretofore consisted, were obstinately refused. From the initial onset there was progressive emaciation and prostration. Two or three days following the first manifestation of the disease, there came on an intractable diarrhoea, the stools numbering six to eight daily, as best I could observe, very offensive, and showing at intervals mucus streaked with blood. Shortly following the diarrhoea, the characteristic skin lesions presented themselves which consisted in desquamation and exfoliation of the dorsal surfaces of the hands, involving also the fingers and lower portion of the forearms. All the lesions were in a state of desquamation. The tail at the root was markedly erythematous and in a state of desquamation, and the hair came off in many places, leaving it rough and denuded.

Nineteen days after the first signs of the disease appeared the animal died, and the day prior to death photographs were made, which I have here, with others, for your consideration.

POST-MORTEM FINDINGS.

An autopsy was made about twelve hours after death of the animal, death being due to anaemia (toxemia), which was secondary; the heart, kidneys and liver were normal; the spleen was quite pale and indurated, and showed signs of atrophy. There was marked evidence of engorgement of the mesenteric

*Read in Section on Medicine of Southern Medical Association, Seventh Annual Meeting, Lexington, Ky., November 17-20, 1913.

vessels and the intestinal tract showed signs of congestion and superficial necrosis. There was a thick muco-purulent exudate in the colon, sigmoid and rectum, showing marked evidences of intestinal putrefaction.

The gastro-intestinal manifestations being so conspicuous, well-marked and developed, I made plate cultures from feces and sub-cultured on Endo's medium and isolated a bacterium, closely allied to members of the colon group, and implicated this bacterium as a probable specific etiologic factor concerned in pellegra. The monkey's blood at this time agglutinating in dilutions of 1:100.

Being unsuccessful in my various attempts in trying to produce the disease in other mon-

Rabbit No 1 -Showing erythema, desquamation, pigmentation of ears.

keys with this bacterium, after having injected broth cultures intravenously, sub-cutaneously, intraperitoneally and intracranially, and adhering to my original hypothesis, that pellagra was an infectious, or protozoal disease, I directed my efforts experimentally toward the rabbit as a probable susceptible animal to pellagra.

I merely cite the results of the foregoing experiment in the light of the experimental inoculations in the rabbits, which would indicate very strongly that this monkey did present some striking evidences of the disease.

EXPERIMENT NO. 1.

June 13, 1913. I injected rabbit No. 1 into the posterior auricular vein and loose subcutaneous tissue over the abdomen with 2 c. c. of blood plus 1 c. c. of sodium citrate solution (2 per cent) from a pellagrin exhibiting some of the early and moderately advanced signs of the disease. The patient from whom this blood was obtained was a boy of 14 years, who had a severe stomatitis, diarrhoea, anorexia, prostration and anaemia, temperature 100 degrees F. There were well-marked lesions of erythema, desquamation and pigmentation on the dorsal surfaces of both hands and feet; his father has the disease, which is well marked and moderately advanced. This boy's uncle died in the house where this boy lives, with every evidence of chronic pellagra. His

Rabbit No. 2—Showing well-marked lesions of desquamation and exfoliation of ears and neck.

aunt also died of typical pellagra some weeks ago, and there are other members of the family who show suspicious symptoms of the disease.

Four to six hours following the injection in the rabbit there came on signs of anaphylactic shock, dyspnoea, clawing at the throat, paralysis of the occular muscles and of the forelegs, rapid, catchy respiration, convulsions, marked spasmodic contractions of the diaphragm and unable to walk or stand. Six hours later there were signs of improvement, the animal could stand on its feet and walk a few steps. Convulsions ceased, however, there were still marked evidences of twitching of the voluntary muscles over the entire body.

I attributed these phenomena to some hypersensitiveness on the part of the animal to this foreign proteid.

July 6, 1913, the animal began showing lesions on the dorsal surfaces of both ears which consisted in erythema, exfoliation and pigmentation, slight diarrhoea, ptyalism, anorexia, loss of spirits and rapid emaciation and prostration, both corneae were extensively ulcerated, the gums were injected and saliva dribbling from the mouth.

The period of incubation in this rabbit was twenty-four days; photographs were made

Fig. 1—Note scaling on hand. Monkey in lateral prone position.

six days before death. July 12, 1913, this rabbit was placed in the sun, as had been my custom to do in order to bring out more clearly the cutaneous signs, following which the animal was seized with convulsions.

July 15 the animal died; autopsy held thirty minutes after death. The animal was emaciated, both corneae extensively ulcerated, ears showing well marked lesions of erythema, exfoliation and pigmentation; the ears, while being held between the fingers to be amputated for future preservation, the superficial skin sloughed off, leaving the cartilaginous portion of the ear on the tip exposed. There were marked signs of anaemia and no other lesions could be found to explain the cause of death of the animal aside from some slight meningeal irritation, which was attributed to the existing probable pellagrous condition; control rabbits placed in the sun, developed no lesions on ears nor presented any signs as did this rabbit No. 1.

Fig. 2—Hands flexed, showing well-marked lesions. Desquamation. Note expression of face, due to extreme emaciation and prostration.

EXPERIMENT NO. 2.

July 9, 1913, I injected subcutaneously and intravenously a full grown Belgian hare (buck) which was exceptionally strong and vigorous, with 1 c. c. of blood plus 1-2 c. c. (2 per cent) sodium citrate solution, from rabbit No. 1. No reaction followed, with the exception of slight drowsiness being observed. July 19 began showing well marked lesions

of hyperaemia, desquamation, pigmentation and extensive sloughing and exfoliation of the dorsal surfaces of both ears, the lesions involving also the back of the neck and extending very near to a point between the shoulders. There was evidence of a very superficial desquamation on the inside of both ears, which consisted of very small hyaline scales; the animal had some diarrhoea; the exfoliation was so well marked that the hair and skin came off in great flakes, resembling the progressive and well-marked exfoliation seen on the dorsi of the hands in human beings. Period of incubation, ten days. This rabbit did not show at any time any marked or grave constitutional disturbance, the cutaneous signs

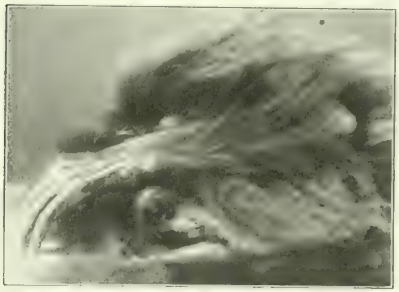

Fig. 3—Sana monkey. Prostration extreme. Monkey assumes position. Note hated red elbow.

being the more prominent, well developed and conspicuous; at this time the animal seems to have apparently recovered.

Rabbits Nos. 3, 4 and 5, which were injected at the same time, with the same blood and the same quantity as rabbit No. 2, developed only a slight diarrhoea, and show only a few superficial lesions on the ears, which consisted in erythema, desquamation and pigmentation, the period of incubation being only a difference of a few days. These also have recovered without manifesting any marked signs of constitutional involvement.

EXPERIMENT NO. 3

July 10, 1913, rabbit No. 6 was injected intravenously and subcutaneously with 1 c.c. blood plus ½ c.c. sodium citrate solution (2 per cent). This blood was obtained from a woman in the very incipiency of her attack, who recently presented herself, exhibiting some of the milder symptoms of pellagra. There was present a mild, though intractable stomatitis, slight diarhhoea, erythematous

Fig. 4—Sana monkey. Note back of hands, ear desquamating, painful expression of face and signs of emaciation.

lesions, involving the radial side of the dorsi of the hands, and extending from the wrist over the forearms to the elbows. There was also a well marked hyperaemic lesion on the back of the neck, extending into the inter-scapular region.

July 19 this rabbit began to show lesions, first beginning at the root of the ears, which

consisted in erythema, desquamation, exfoliation and pigmentation; the hair came off, leaving the parts denuded, striae were very manifest on both ears (dorsal surface); photographs were made July 19; period of incubation, ten days.

In all the foregoing experiments, the inoculations were carried out under the strictest aseptic precautions possible. The blood was obtained by veni-puncture and drawn into an all-glass syringe with the sodium citrate solution previously added. The contents were well mixed and injected as stated in the outset.

Fig. 5.—Same Monkey. Showing characteristic lesion on elbow as is sometimes observed in individuals suffering from pellagra.

It will be further noted that the class of patients selected, as far as possible, were those who were in the incipiency of their attacks. I acted on the hypothesis that at this time and at this stage of the disease, the probable specific, bacterium, spirillum, protozoon or virus, was present in the peripheral circulation. This is the basis upon which I conducted my line of investigations, thinking that while the specific factor, standing in a causal relationship to pellagra, might be present at one time and absent at another, as we find in yellow fever, there is no danger of the contagion being transmitted by the mosquito (stegomya) after having bitten a patient after the fourth or fifth day of the disease.

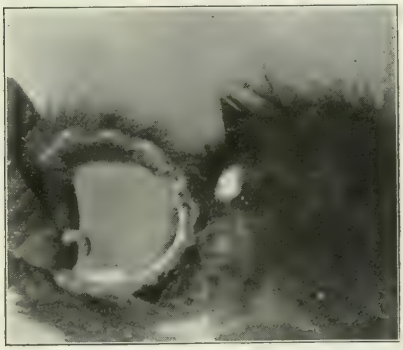

Fig. 6.—Same monkey. Showing tail denuded of hair, and showing marked signs of desquamation. Note white spot on root of tail, showing evidences of erythema and desquamation.

THE PROBABLE TRANSMISSION OF PELLAGRA BY INSECTS.

The marked seasonal spring incidence of pellagra, the rise and fall of pellagra and malaria in my section along the Gulf coast, prompted and led me to make investigations along the line of insect transmission.

The first of my activities in this direction was with the bedbug. I was successful in collecting from a bed which a pellagrin had occupied for six months a large number of these human parasites, including about fifty, large and small; these were kept in a wide-mouthed jar. I induced these bedbugs to bite

and abstract blood from the large vein underneath the wing of a full-grown chicken. It was necessary to extinguish the light before they would begin their activities in sucking blood; after a few minutes they were removed to a test tube and there could be seen several discrete ecchymotic spots on the skin overlying the vein where they had been active in abstracting blood. This process was repeated at intervals of every other day for about three weeks; a greater number of the bugs by this time were dead, due to their deadly combat. Up to this time, a period of about four months, no lesions have developed in this chicken.

FLEA EXPERIMENT ON MANGY DOG.

On several occasions my attention was attracted to the malignancy of certain cases of pellagra, as well as other members of the same household suffering from the disease, or in individuals who had frequently visited these homes, in which homes and on whose premises there were found mangy dogs heavily infested with fleas (Tcenocephalus serraticeps), which dogs were in the habit of sleeping on the beds in the daytime. One of these patients, a negro woman, gave a history of having been heavily infested with fleas from this dog, and had noticed no signs of her pellagrous condition until she had come into possession of the dog. I bought the dog and immediately placed him in a cage with a full-grown Rhesus monkey, and kept them continuously associated for thirty-seven days. The monkey soon became heavily infested with fleas from this dog, as they could be seen crawling on her body and buried in the skin. The dog soon died from emaciation and a black diarrhoea. Up to this time, a period of three months, no signs of pellagra have developed in the monkey.

Plague, under the name of black death, which once decimated the population of the earth, having made its grewsome appearance first on our shores in coast cities and towns, and being principally transmitted by the rat flea, induced me to investigate this insect as a probable transmitter of pellagra. Furthermore, pellagra being principally a European disease, and coming to our shores in exactly the same manner, first making its appearance, according to statistical records, on the coast of the Carolinas, and later invading new territory in the interior with alarming rapidity and unabated.

I am reliably informed that in European countries, where pellagra has ravaged the country for hundreds of years, that there are found thousands of mangy dogs infested with fleas, and that the peculiarity of fleas in that country, not unlike the United States, is to attack and infest women with about the same overwhelming ratio as men and women are attacked with pellagra, which might be a partial explanation for the greater number of cases occurring in women than in men.

There are said to be about fifty species of fleas in the United States, and to my mind, without evidence at hand to show, they should be looked upon with grave suspicion with reference to the spread and transmission of pellagra.

Another case of pellagra presented herself not without equal interest, a bright mulatto woman, aged twenty-two years. She gave a history of no trouble until she came into possession of a mangy dog, which showed signs of mange and salivation. This dog was heavily infested with fleas. She was in the habit of giving this dog daily baths. Just twenty-one days after this dog came to her home she developed a typical case of pellagra, in the meantime, having become infested with fleas from this dog. I also purchased this dog, and infested several rabbits, chickens and white mice, and also kept the dog in a cage with a black Hondurean monkey for two months;

at the present, however, no symptoms of pellagra have developed in the monkey, neither in the rabbits, chickens or mice. The dog soon died with a black diarrhoea. No evidence of pellagra could be found post-mortem, except slight congestion of the small intestine.

CORNBREAD EXPERIMENTS.

Samples of cornmeal were obtained from pellagrous homes and from local dealers. Moulds were cultivated, isolated aerobically and anaerobically, suspended in physiological salt solution, and experimentally injected and fed to rabbits, chickens, pigs and monkeys. Neither ever developed any lesions resembling pellagra.

From what I have gained in the way of experimental inoculations with blood of pellagrins in the incipiency of the disease, and the report of Everett S. Lain's investigations on skin diseases among full-blooded Indians of Oklahoma, Journal A. M. A., July 19, 1913, Vol. LXI, p. 168, with other evidence too numerous to set forth in this article, I feel convinced, from my own observations and from his statement, that in his inability in the study of these five thousand Indians to find a single case of pellagra, while they subsisted principally on spoiled corn, to doubt very materially that the cause of the disease is lurking in spoiled corn, and that the condition known as pellagra, which is becoming so alarmingly prevalent in the Southern States, invading new territory, leaving death, insanity and invalidism in its wake, terrorizing our American people and yielding to no therapeutic applications, is to my mind, without evidence at hand, a disease that in all probability is an insect-borne disease, and that dog and cat fleas should be looked upon with suspicion, not to the exclusion of other possible transmitters and further experiment, study and observation is yet lacking and needed to discover and to come into full possesison of all the facts relating to its etiology.

THE DIGESTIVE SYMPTOMS OF PELLAGRA.*

By Seale Harris, M. D.,
Mobile, Ala.

PUBLISHED DEATH RATES FOR PELLAGRA ARE TOO HIGH AND GIVE NO IDEA OF ITS PREVALENCE.

The mortality rates for pellagra, as usually published for the United States, range from 30 to 65 per cent, but these statistics are derived largely from insane hospital reports and from cities in the registration area where only the severe forms, or those in the last stages of the disease, are sent for treatment, and are not to be considered as giving an accurate idea or estimate of the general death rate from pellagra. Undoubtedly there are many cases that have not been recognized. It is certainly true that with increased experience in treating pellagrins I see many cases that can be definitely diagnosed as pellagra that formerly would not have been suspected of having the disease. I have had the misfortune to treat a number of patients for various digestive disorders that make up the syndrome of what Roussel calls "pellagra sine pellagra," without having suspected the true nature of the disease, who later have developed the typical triad of symptoms, i. e., "dermatitis, diarrhoea and depression," that are usually considered necessary for the diagnosis of pellagra.

It is the belief in the comparative frequency of the occurrence of the disease, with but slight or no skin manifestations, in which the symptoms are largely referable to the digestive tract, that makes it appear timely to discuss that phase of a malady that has attracted so much attention since the report in 1907 of the epidemic of pellagra in the Alabama Insane Hospital in Mobile County.

IMPORTANCE OF EARLY DIAGNOSIS.

It is our increasing knowledge of pellagra, with the ability to diagnose the disease in its

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early stages, that is responsible for the reported decrease in the death rate. I believe that as we study the digestive symptoms more we shall diagnose many more of the mild cases, and that we shall, and in a few years, reduce our death rate to at least as low as those reported from certain Italian districts, i. e., less than 4 per cent of those infected.

The importance of the early diagnosis of pellagra is of equal or greater value to the infected patient than the early diagnosis of tuberculosis. It is our ability to diagnose tuberculosis in its incipiency that is largely responsible for the greatly lowered death rate in, and for the cure of many patients afflicted with, tuberculosis. The same is probably true of pellagra; while if pellagra is not recognized until the last stage, as in tuberculosis, pathological changes have occurred that make recovery hopeless. The early diagnosis of pellagra will also have much to do with preventing others from becoming infected. While we do not know with absolute certainty the cause of pellagra, a change in diet and an improvement of the hygiene in the homes of pellagrins, and their neighbors, will certainly decrease the number of those who will become infected.

EXPOSURE TO DIRECT RAYS OF SUN AN EXCITING CAUSE OF EXACERBATIONS.

All observers agree that exposure to the sun will often bring out the eruption and increase the severity of the symptoms in pellagrins, but a report of a case that came under my observation a few years ago strikingly illustrates this phase of the disease:

T. F., age 35, cashier of a bank in a small town near Mobile, consulted me in January, 1910. His important symptoms were sore mouth, burning pain in the epigastrium not referrable to eating, and a mild diarrhoea that had persisted for four years. He had lost probably twenty pounds during that time. He complained of weakness, but he had not lost a day from his work during his illness. There was no history of eruption at any time.

Physical examination revealed no evidences of any eruption on his hands, elbows or feet, and was otherwise negative except that his tongue was a bright red with no coating.

Examination of his stomach contents showed no evidence of food stasis, but there was complete absence of hydro-chloric acid. Microscopic examination of faeces for entamoeba hystolitica and other intestinal parasites was negative.

A tentative diagnosis of pellagra sine pellagra was made and the patient was treated symptomatically. He was given the proper diet for chronic diarrhoea, dilute hydrochloric acid and large doses of bismuth with salol. A month later he reported that all the symptoms had subsided and that he was gaining in weight and strength.

He was apparently completely relieved, having had no symptoms for several months, but in June of 1910 he rode in the sun in an open buggy nearly all of one day. The following day there was general malaise, and in a few days the stomatitis, abdominal discomfort and diarrhoea all returned with greater severity than ever before. The backs of his hands showed the characteristic florid eruption—were "sunburned," as he expressed it. He was brought to me two weeks later, when the symptoms were typical of a moderately severe attack of pellagra.

He was placed in an infirmary, where he was kept in bed in a darkened room for four weeks. The eruption entirely disappeared within three weeks, leaving very slight evidences of the skin lesion, and all the symptoms were greatly improved. The patient thought that he was relieved.

On returning to his home he had to ride six miles in the heat of the day. The symptoms all returned, the depression having been very pronounced, and a few days later, under the impression that pellagra is a loathsome, incurable disease, he committed suicide by cutting his throat with a penknife.

This case, and others, that I have had and that have been reported by many observers, seem to confirm the opinion of Raubitschek that pellagra is the result of some toxin, probably contained in spoiled corn or other cereal, that has but slightly toxic action unless sensitized by the chemical rays of the sunlight. Raubitschek's experimental work in the Institute for Pathology and Bacteriology in Czarnowitz showed that laboratory animals fed upon corn and rice kept well so long as they were in dark rooms, but, when exposed to the

direct rays of the sun, they developed emaciation and paralytic phenomena, dying in from eight to twenty-one days.

Deductions drawn from these experiments and from the fact that nearly all of the mild cases that I have seen are among women and men who are engaged in occupations that do not require them to be exposed to the sun, lead me to believe that one of the reasons why so few cases have been reported from the cities and from localities with mild summers is that their inhabitants are not so much exposed to the sun as in the rural districts of the South Central, Southeastern and Gulf States, in which pellagra is most prevalent.

PELLAGRA PRIMARILY A GASTRO-INTESTINAL INTOXICATION.

Without going into a discussion of the etiology of pellagra, it seems to me that everything points towards its being a gastro-intestinal intoxication or infection due to the ingestion of a toxic or infectious agent in food, probably in corn products.

H. F. Harris, of Atlanta, believes that there are thousands of people all over the country who are suffering from digestive disturbances that he calls "corn intoxication," due to the ingestion of spoiled maize, that are in reality a very mild form of pellagra. My experience, in a practice in which most of my patients are referred to me for gastro-intestinal disorders, convinces me that there are a great many cases in what some authors call the "prepellagrous" stage that completely recover by leaving corn products from the diet and in having the patients improve their hygienic conditions.

IMPORTANCE OF ANAMNESIS.

The anamnesis is of great importance in making a diagnosis of pellagra because of the intermissions, remissions and exacerbations of the symptoms that characterize the disease. There may be periods of complete euphoria, particularly during the winter, with the history of nervous and digestive attacks of varying degrees of severity in the spring, summer and early fall months. In many cases the dermatitis is so silght that I have had a number of confirmed pellagrins deny that they had had any eruption—"only a little sunburn on the backs of my hands every spring." I have seen several cases in the exanthematous stage that a month later it would not be possible to discover any evidences of previous skin lesion. In other cases the digestive symptoms may continue through the winter with recurrence of dermatitis once or twice a year. In many cases there is no history of eruption at any time, but frequent recurrences of the characteristic digestive symptoms.

SUBJECTIVE SYMPTOMS.

Since in history taking the complaints of the patients are first considered, it seems best to first take up the subjective symptoms as they occur, in their order, throughout the alimentary tract.

Mouth.—The pellagrous patient usually complains of a burning sensation in the mouth, as if scalded from taking very hot coffee or hot water. This may last only a few weeks, during an exacerbation of the other symptoms, or it may be continuous for months or even years. Sometimes there is actual pain, which may be increased by eating, particularly coarse foods or anything hot or cold. Acids also increase the burning. The tongue is frequently sore and the gums may be tender, spongy and bleed easily.

Salivation is frequent during the exacerbations and at times is profuse, the saliva dribbles from the mouth continuously. At times the ptyalism and the stomatitis may be so pronounced as to very closely resemble mercurial ptyalism.

Oesophagus.—The burning sensation in the mouth may extend to the oesophagus, and substernal pain is sometimes pronounced. Roussel calls attention to dryness of the oesophagus, with dysphagia as one of the early symptoms. I have noted it in several cases, and regard it as an important symptom. The glo-

bus hystericus is also observed in the patients with other nervous manifestations.

Stomach and Abdomen.—Anorexia is the rule, particularly during the exacerbations; some patients, incorrectly associating eating with the abdominal pains, actually suffer from fear of taking food (sitophobia). Akoria, or sense of satiety from taking even small quantities of food, may be present. Bulimia is present in some cases, most frequently when the various psychoses are noted.

Gaseous eructations are frequent. It is often of a nervous character, amounting to aerophagy nervosa. Eructations of food are not infrequent in the cases associated with anacidity and dilatation of the stomach. Vomiting may occur in the same conditions, but it is not a frequent symptom.

In the early cases, a sense of fullness or pressure over the epigastrium, which may or may not be associated with eating, is often complained of. Later, the burning pain (pyrosis) over the epigastrium, and sometimes over other parts of abdomen, appears as the most disagreeable, persistent and characteristic symptom referrable to the stomach. Colicky pains, apparently referable to other organs, may occur.

I have known pellagrins operated upon for suspected gall stones, appendicitis, and even salpingitis, when exploration revealed nothing abnormal. I, myself, had one case explored for a pyloric or duodenal ulcer when no pathological condition was found within the abdomen. Operation, as in others who have pronounced neurasthenic symptoms, is almost invariably followed by an increase in the severity of the abdominal pains. Hunger pains are sometimes complained of, and at times the pains are girdle-like, resembling very closely the gastric crises of tabes.

Intestines.—Diarrhoea is the rule in pellagra. It varies from looseness of the bowels, two or three stools per day, to twenty or thirty bowel movements within twenty-four hours. In some cases the diarrhoea is of a dysenteric character, four or five stools per day, containing mucus and blood and preceded by griping pains. In the severe cases there is a profuse liquid diarrhoea that oftentimes weakens a patient very rapidly, and frequently it precedes death. In one of my cases there was a large hemorrhage from the bowels, which was the exciting cause of the patient's death. Constipation is sometimes present, to confuse the diagnosis, but there is nothing distinctive about it. It occurred in about 10 per cent of my cases.

Rectum.—The burning pain in the rectum is an almost constant and distressing symptom. Sometimes there are ulcerations of the rectum and fissures in ano, which cause very great pain.

Nervous System.—Associated with the digestive symptom above mentioned are psychic symptoms, such as inability to think clearly and irritability in the early stages, mental depression later. Insomnia is frequent. Tinnitus aurium, headaches and vertigo may also occur. There may be vague, fleeting pains in the muscles and joints. The patients often complain of fatigue from the slightest exertion, even in the beginning of the attack, and, later, there is marked muscular weakness, amounting to prostration. There is loss of flesh in all the pronounced cases, and in the late stages the patient becomes cadaveric.

PHYSICAL EXAMINATION.

The Mouth.—The appearance of the tongue is distinctive. In the early stages it may be coated and fissured, with very red edges. Later, the coating is thrown off, leaving the tongue very red and smooth, though, in some cases, it is fissured, resembling rare beef. There may be aphthous, and even deep-seated ulcerations on the edges and underneath the tongue. The buccal mucous membrane is also very much reddened, particularly around the edges of the lips. The gums also are reddened, and, in some cases, spongy and ulcerated, somewhat like in mercurial stomatitis.

Abdomen.—There may be gaseous distension of the abdomen, and tenderness over the epigastrium; in some cases, over the entire abdomen; but often when the diarrhoea is severe, the abdomen may be flattened.

Rectum.—Examination of the rectum reveals the fiery red color as seen in the mouth, and oftentimes extensive ulceration of the rectum with fissures in ano.

Examination of the stomach contents after the Ewald test breakfast has shown in at least three-fourths of my cases, a deficiency, or absence of free hydrochloric acid. Food stasis is present in the cases associated with dilatation of the stomach. Mucus is present in the majority of cases, so that the gastric findings accord with the pathological picture of chronic gastritis that is found in nearly all autopsies on pellagrins.

Dr. Clarence Johnson, of Atlanta, in a report of twenty cases before the American Gastro-Enterological Association, pointed out a very remarkable relationship between the absence of free hydrochloric acid and the presence of diarrhoea. In only one of his six cases with free hydrochloric acid present was there diarrhoea, while in all of the fourteen cases with anacidity, diarrhoea was an important symptom.

Microscopic examination of the faeces may reveal in a small proportion of cases the entamoeba hystolitica, uncinaria ova, strongyloides intestinalis, cercomonas and other intestinal parasites, but they are simply an incident, and have no more bearing on the symptoms than, for instance, an amebiasis associated with uncinariasis.

DIAGNOSIS.

The diagnosis from the digestive symptoms alone rests largely upon the burning pain in the mouth, the dryness of the esophagus, the dysphagia, the burning or indefinable pain in the abdomen, and the diarrhoea. These symptoms in a person residing in a community in which there are other cases of pellagra are, to my mind, quite sufficient for a positive diagnosis, even though there has been no skin lesion present at any time, and in any community they should be regarded as suspicious of pellagra. When constipation is present without skin manifestations I do not think a positive diagnosis of pellagra is justifiable, though in several cases of constipation I have made a tentative diagnosis that was afterwards verified.

Careful questioning will often elicit a history of "sunburn" or slight eruption on the dorsal surfaces of the hand that occurred in the spring or fall, which, added to the digestive symptoms just described, make the diagnosis of pellagra absolutely positive.

TREATMENT.

Lombroso's epigram, "There is no disease, only the diseased," certainly applies in the treatment of pellagra. The patient should be treated symptomatically with special regard to the hygienic management.

General Management.—The patient should be kept in bed for a "rest cure," from four weeks to several months, in a darkened but well-ventilated room. Massage and hydrotherapy are adjuncts of value.

Diet.—Patients are usually poorly nourished and the diet should be as highly nutritious as possible, containing a large amount of nitrogenous food. It should be about the same as for any case of chronic diarrhoea. In the beginning of the treatment I usually limit the food to liquids, such as barley or meat broths. The infusion from green vegetables, particularly spinach and turnip tops, known in the South as "pot liquor," is said to have some astringent effect in diarrhoea and has proved very useful in dieting the pellagrins. Raw eggs and perhaps scraped beef are also permissible from the beginning. Later, tender meats, as chicken, lamb and fish, may be given, as may also the green vegetables. The farinaceous foods should be limited to dry toast, thoroughly cooked rice and barley or oatmeal

gruel. Cornbread, hominy and other corn products should be prohibited from the beginning, and patients should be instructed not to eat them for years after the symptoms have subsided. A number of recurrences have been reported from patients going back to a diet largely of cornmeal. Milk should not be given until the diarrhoea has subsided, and then should form an important part of the nourishment. After a few days, forced feeding should be resorted to even if there is the diarrhoea, because the improvement in nutrition of the patient is the most important indication.

Medicines.—In beginning the treatment of pellagra, I usually give several small doses of calomel, one-twentieth grain every hour until one-fourth grain is given, then bismuth subnitrate in from one-half to one dram doses with five grains of salol every two to four hours as may be necessary to control diarrhoea. I have rarely found it necessary to use opium. Where there is absence or deficiency of hydrochloric acid, dilute hydrochloric acid with pepsin often relieves the gastric symptoms and will not infrequently control diarrhoea. Colonic irrigations with normal salt solution are often helpful, and, in some cases, where there is pain in the rectum, anesthesin suppositories give great relief. When there is stomatitis with ptyalism the chlorate of potash given internally yields splendid results. Mild antiseptic mouth washes, as diluted liquor antisepticus alkalinus of the National Formulary are helpful. Lombroso thinks that arsenic and the chloride of sodium are antidotes for the toxines from spoiled corn and, following his teachings, I have used both in large doses. The salt is usually mixed with the food. Fowler's solution of arsenic is the best preparation and should be given in ascending doses of from one to fifteen, or even twenty drops three times a day, or until the physiological effects are obtained. I have used atoxyl in a number of cases, but have not been pleased with the results. Salvarsan has also been used with varying results by different observers. I am inclined to think that the arsenic must be taken into the alimentary canal to get the beneficial results. Certainly I have seen very remarkable improvement in the digestion and general nutrition of patients with pellagra follow the use of Fowler's solution.

Psychic Treatment.—There is no disease or condition with which I am familiar in which the confidence of the patient is more important than in pellagra. Pellagrins are often depressed, and regular, systematic encouragement is necessary to get the patient's cooperation in the building up process that is essential for improvement and recovery. The general impression that pellagra is an almost hopeless disease is, I am sure, responsible for much of the depression and not a few of the suicides in pellagrins. Suggestion and DuBois method of re-education has in many cases given me better results than any form of medication.

DISCUSSION—PAPERS OF DRS. DEARMAN AND HARRIS.

Dr. Stewart R. Roberts, Atlanta, Ga.—Dr. Harris in his paper referred to one of the three selective areas on which pellagra usually exerts its action, these three areas being, first, the skin; second, the alimentary tract, and third, the nervous system. There is one great peculiarity about those three selective areas as regards pellagra, and that is that embryologically the skin and the nervous system are derived primarily from the ectoderm, and that the mucous membrane of the alimentary tract is derived embryologically primarily from the entoderm; but the entoderm and ectoderm are primarily epithelial tissues, so that pellagra is a disease which exerts its selective action upon epithelial tissue and omits practically altogether its damage to the mesodermic tissue.

In the next place, the three chief symptoms of pellagra in its action on the alimentary tract which Dr. Harris discussed in his paper are, first, sore mouth; second, indigestion, and third, diarrhea. These are the three great symptoms presented by the alimentary tract in the ordinary case of pellagra. In the sore mouth we include also changes in the tongue, and the tongue in pellagra is a typical glossitis, and a dissecting glossitis at that. It is an inflamed tongue whose epithelial coat is shed, a tongue without coat, a tongue like a piece of beef cut in cross sections. The mouth is sore because the epithelial covering has been shed or is in the process of shedding. The mucous membrane is also inflamed, a true stomatitis. Inasmuch as the mucous membrane of the esophagus is a continuation of the

mucous membrane of the mouth and pharynx and of the stomach, etc., it is reasonable to suppose that an inflammation beginning primarily in the mouth and affecting the system as badly as pellagra does, will extend downward throughout the mucous membrane of the alimentary tract in its continuity; but I want to call attention to one peculiar thing—the selective action of syphilis on the alimentary tract is primarily on the mouth with mucous patches, and the selective action of syphilis on the alimentary tract in the later stages is primarily on the rectum, with syphilitic stricture of the rectum or a concentric gummatous growth of the rectum with resulting mechanical stricture. In the later stages of pellagra or in the malignant cases we not only get an acute sore mouth or an inflammation of the mucous membrane of the rectum extending outward beyond the muco-cutaneous junction, but we get a true dermatitis in the anal region.

Within this last year I have seen clinically two patients who were for the first few minutes as they came in a considerable obstacle to me. I could not quite make out what their trouble was. The tongue was coatless; they had a tongue like the tongue of a pellagrin. One patient, a negro, gave a history that for the last two or three weeks he had a sore mouth, with vomiting and diarrhea. The other patient, another negro, said in a few minutes after a meal his stomach would get sick and he continued to vomit until all food taken in during the meal had been thrown up. Or, if he did not vomit the food, it would pass through the alimentary tract quickly and be passed out in the movements of the bowels in practically the same state in which he swallowed it. I went into these cases carefully and found that both suffered from acute syphilitic infection, syphilitic stomatitis, mucous patches and syphilitic gastritis. I think I am justified in using this term because one of the negroes had repeated attacks of vomiting of blood from the stomach and had passed blood in his bowel movements. There was vomiting, stomatitis, vomiting of blood and rectitis, and the vomiting and the diarrhea stopped in from twenty-four to forty-eight hours after the administration of salvarsan; so that those are the only two cases I have run across that have given a syphilitic condition or a condition of the alimentary tract due to syphilis analogous to the usual condition of the alimentary tract which we find in ordinary cases of pellagra.

Dr. Louis Leroy, Memphis.—The subject of pellagra, I believe, is still the biggest one that is before us at the present time. These pictures of the monkey and this report upon the etiology are very instructive and almost convincing. I hope the experiments may be repeated still further and the subject more carefully studied in the very near future.

There are two small points perhaps that might have been applied here with some interest, as I have seen benefits from them in early cases of pellagra. One is the exposure for a few minutes to the X-ray of the lesion and watching the result to see whether it accentuates the same as it does in the sun. I have seen pellagrous eruptions of low grade accentuated under the X-ray activity without doing any more harm than exposure to the sun would do as a diagnostic measure. The other is the increased virulence of the symptoms under a corn diet. I have never had any conviction that the corn theory of pellagra amounted to anything as a cause of the disease. I do not believe there is anything in it, but I am sure that the ingestion of corn products accentuates activity of pellagra just the same as I am confident that the ingestion of alcohol accentuates the activity of gonorrhea or accentuates the activity of syphilis, but is not by any means the causative factor directly.

The use of arsenic in very large doses, as was advocated by Dr. Harris, is to be desired, but in my experience it is not infrequent to find patients very intolerant to the use of arsenic internally. They can stand but small doses, and I have come to look almost upon this as of prognostic significance. A patient who can take large doses of arsenic has, to my mind, a better prognosis than one who begins to show arsenical symptoms after three or four drops of Fowler's solution are taken.

Another point of interest is the character of the mucous membrane trouble. The last speaker referred to it a moment ago as a typical glossitis or a typical inflammation of the mucous membrane. It is not quite a typical inflammation. I believe if he will look at the lesion, it will appear to him again as if it is more of a necrosing inflammation than a typical inflammatory exudative inflammation. In other words, there is a great deal of toxemia; there is a bright redness due to relaxation, paresis of the capillaries with a stasis, and it is not a typical active congestion which is common in the ordinary infections or other common inflammations of the tongue. There is a true necrosing action and a paralysis of the vaso-motor mechanism which gives that very intense redness as a feature rather than as an active process. That seems to be true in the beginning of the skin lesions. There seems to be a difference in the appearance, although they do resemble closely in the beginning so-called dermatitis from what you find in an irritative dermatitis. These cases are really paretic conditions, followed by a necrotic action rather than that which we find in a violent true inflammation.

Dr. E. H. Martin, Hot Springs, Ark.—I wish to say in connection with Dr. LeRoy's remarks that the worst forms of stomatitis in pellagra are due to secondary infection. Very soon after the tissues have acquired such low vitality they become infected with ordinary pus germs and ulcers and yellow patches are formed.

During the past season I have treated over fifty more cases of pellagra and nearly all of them were treated with salvarsan. There was only one death. Some of them still have nervous symptoms, but there were enough quick cures to warrant one in going on with the treatment. The symptoms disappear in some cases after the use of salvarsan just as rapidly as syphilitic symptoms disappear under similar circumstances and no one observing these cases can doubt the specific effect.

Sodium arsanilate (soamin) is just as specific for pellagra as is salvarsan. I have cases under

observation that have been well for three years and some of the women have borne healthy children since being cured.

The cacodylate of soda may do the same thing but I have never used it as I began using soamin with my first cases.

When one considers the history of the disease, it is almost inconceivable to think of intelligent men regarding it as a food intoxication. The simple fact that the disease appeared on the Atlantic Coast and swept like any other plague across the country is enough to show that it is of parasitic origin and communicable. Although we have no evidence to show that the disease is directly contagious, it must undoubtedly be communicated in some indirect way from case to case.

The fact that the sexes are affected in equal numbers when under the age of fifteen and over the age of fifty-five and that between these ages 70 per cent of these cases are women and only 30 per cent men, is also evidence of communicability being changed by environment. Women who stay in the house have seven chances to contract the disease to three chances for men who work in the field or are out of the house much of the time. We can only judge from this that some house insect is the tentative host or carrier of the germ causing pellagra.

The very fact also that salvarsan and soamin have a specific effect on the disease is evidence that it must be of germ origin and is probably caused by a spirochaete.

Dr. William J. Hunnicutt, Asheville, N. C.—I have been very much interested in pellagra for the past few years and especially its etiology. Along this line I have made some observations but nothing conclusive. I want to report a case which I feel has some bearing on the line of thought that the doctor has given us in this valuable paper, and it is this:

A patient of mine after a slight operation, developed within twenty-four hours the typical erythematous eruption on the hands, following in rapid succession the other classical symptoms of this disease, such as sore mouth, red tongue, inflamed and painful conditions of all the mucous membranes, prostration, loss of appetite and nervous symptoms. This patient was confined to her bed about six months. She owned a pet maltese cat, and they were almost constant companions. The cat often ate from the tray of the patient, the scraps of food which was left. Within a short time, I should say a month, the cat began to show signs of being sick; the hair seemed rough and stood out, the skin becoming more and more roughened and scaley, restless, loss of appetite, profuse salivatation and diarrhea, progressive emaciation and died from exhaustion. A mother cat and kitten were taken the same way, developing same train of symptoms, progressed in the same downward course and died in like manner as the maltese cat. I was unable to take up this chain of evidence and trace it out, but believe there was a direct communication between patient and cats and would lend color to the contagious theory of the disease. I spoke of this to some of my colleagues and along this line I am going to make some investigations. I believed at the time that there was a contagion through the patient to the cat; and possibly the cat tribe, rats or dogs may be a mode of transmission of this disease. In speaking of the treatment, I have nothing new to offer or suggest. But I have had the best results from the arsenical preparation known as soamin. Where I used this drug almost exclusively all recovered. Others treated along other lines recommended by various authorities I have not had such good results.

Dr. W. A. Dearman, Long Beach, Miss. (closing the discussion).—I thank you for the kind consideration you have given my paper and I assure you I will not cease my activities in any direction in trying to discover the cause of pellagra. I am not so narrow-minded that I want to keep back anything and not give it to my fellow practitioners or to any investigator who may be engaged in this research work. I believe in lending a helping hand. If I should discover the cause of pellagra and a specific treatment for it, I would not hesitate to give it to my brother practitioners.

With regard to the treatment of pellagra, I have had some malignant cases and some mild ones. I have tried soamin, quinin and tincture of opium, and I have tried buttermilk, etc., and all kinds of dietetics, and have put the patients in the best possible condition, but when they came to pay me I hated to take their money. The only thing that will do the patient any good when he has pellagra is to change his environment, and if he does not get well he is a hopeless case.

THE FIRST SYMPTOM IN PELLAGRA.

By Thompson Frazer, M. S., M. D.,
Asheville, N. C.

The sudden appearance during spring or early summer of a symmetrical dermatitis on the back of the hands and lower forearms, accompanied by diarrhoea and marked nervous symptoms, would lead most physicians to diagnose the case as one of pellagra. Unfortunately, however, the symptoms of this disease are not always so clear-cut as in this suppositious case, being of more gradual evolution frequently, and finding expression at all seasons of the year. On account of the well-known tendency of the erythema to develop during spring or summer we are prone to think of pellagra as a disease with seasonal manifestations, shutting our eyes to the less compelling symptoms which occur during

other periods of the year, symptoms which antedate the eruption and which, if observed and interpreted, would enable us again and again to make a provisional diagnosis, at least, of pellagra.

For, if careful histories be taken, it will be found that a surprisingly large number of pellagrins have symptoms months—and in some instances years—before the advent of such symptoms which prompted them to consult a physician. With the hope of facilitating the recognition of these early cases of pellagra I have attempted to ferret out the first symptom noted in a series of twenty-five cases, this paper being based upon the information thus obtained. While many pellagrins seem to have enjoyed perfect health until the "attack" which stands out in bold relief against their previously healthy condition, one is impressed, in taking case-histories, with the large number who had "not been well" for some considerable period before the eruption made its appearance.

The propriety of ascribing to pellagra certain symptoms with which the patient has suffered prior to the onset of unmistakably pellagrous symptoms is of course questionable. Thus one of my series had an endocarditis, seven gave a history of pulmonary tuberculosis and the symptoms dependent on imperfect compensation in the one, and the cough, expectoration and hemoptyses in the others could be safely attributed to the heart and lung lesions respectively. At times the inference is less plain and the question at once arises is such and such a symptom an indication of pellagra or is it merely the manifestation of some pathologic condition which existed before infection (if infection it be) took place? Be this as it may, the recording of the previous history of pellagrins cannot but be of service, and familiarity with the earlier symptoms will in many instances put us on our guard.

In attempting to elicit the first symptoms noticed by pellagrins I met with a variety of replies, some of which surprised me greatly. Thus, *sore mouth* was given as the first symptom by two patients only, although it was present in nineteen out of the twenty-five cases. One patient complained of a sore mouth appearing suddenly during the middle of the summer and followed by insomnia and a symmetrical dermatitis on the hands. The other, a woman aged 28, claimed that she had had a sore mouth lasting a few weeks during a period of several years, diarrhoea and dermatitis not being noted until two years ago. Sore mouth and eruption appeared suddenly and simultaneously in two other cases.

While in seven cases the *dermatitis* was given as the introductory symptom, closer questioning brought out the fact that most of this group had felt distinctly below par for several months before its exhibition, although unable precisely to define their symptoms.

Others presented a still less definite onset. In four "indigestion," comprising loss of appetite, distention and constipation, was the initial symptom, and one which had lasted with remissions for periods varying from a few months to a year. They were treated for "stomach trouble" until pellagra frankly declared itself.

Four cases were ushered in with diarrhoea. In one a severe spring attack, with ten to fifteen passages daily, was the herald of pellagrous infection; in the other three cases the invasion was less acute, the diarrhoea amounting only to an occasional looseness of the bowels well in the wake of which followed skin and nervous manifestations.

Pyrosis, distressing and most persistent, opened the attack in one patient; occurring during the fall, it was not until the following spring that its relation to pellagra became evident.

In two cases irregular and scanty menstrua-

tion was the precursor of more characteristic symptoms.

Nervous symptoms were the forerunners in three cases. In one, forgetfulness, with inattention, was a premonitory sign; in another, weakness and a ready irritability existed several weeks before the attack; in a third case, vertigo and noises in the head sounded the alarm.

From what has been said it is clear that the clinical picture of pellagra in its early stages is a varied one, although most of the symptoms at this time may be referred to the skin, the gastro-intestinal tract, and the nervous system. And even when "characteristic" symptoms are present it may be very difficult to put the saddle on the right horse. Thus, in a patient with unmistakable signs of pellagra it may be next to impossible to determine from the history whether pellagra should be assigned as the cause of previous dysenteric attacks or whether these should be regarded as dependent on some other infection.

Recently it has been observed that certain patients operated upon have "shortly after the operation developed frank symptoms of pellagra, "who before the operation exhibited such symptoms as general weakness, insomnia, nervousness, indigestion, constipation, less often dysentery and delusions. (L. A. Griffith, Columbia, S. C., "Observations on Pelagra as Related to Surgery," Tr., Tri-State Med. Asso., 1913.) The term "masked pellagra" has been given to these cases. It has been noted also that pregnancy may bring to light a latent pellagra. So it is probable that in the endemic area there are a great number of these unrecognized cases of pellagra. It is my belief that a diligent search for the "first symptom" will enable us to unearth many such a case.

CEREBROSPINAL MENINGITIS: A FURTHER DISCUSSION OF CERTAIN SIGNS AND SYMPTOMS.

By Randolph Lyons, M. D.,
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PAPER II.

(Report of Twenty-two Cases.)

In a recent paper (1) on cerebrospinal meningitis the diagnostic merits of certain signs or special measures were considered, but owing to limitation of time, no reference was made to symptoms. It will, therefore, be the purpose of the present communication to take up for discussion some of the more important symptoms and signs not heretofore touched upon.

The conclusions arrived at in the first paper may be summarized as follows:

"From a study of twenty-one sporadic cases of meningococcus meningitis in adults it was found that the signs and measures analyzed fall into the following order of diagnostic importance:

"Lumbar puncture stands first. The initial puncture established the diagnosis in 95 per cent of the cases. Next in importance is rigidity of the neck. This could be demonstrated in twenty out of twenty-one cases on first examination, or 95 per cent.

"Kernig's sign comes third. It was present on first examination in 90 per cent of the cases, and at sometime during the disease in 100 per cent.

"The "neck sign" of Brudzinski falls into fourth place. It was found positive on admission in 75 per cent of the cases and could be elicited at sometime during the affection in 94.4 per cent.

Brudzinski's contralateral (identical) reflex comes fifth on the list, being present on first examination in only 33.3 per cent of the cases. It was positive at sometime during the disease in 50 per cent of the cases.

"Babinski's sign occurred in but three of the cases, or 11.6 per cent, at some time during the disease. In two of these cases it was positive on admission.

"Macewen's sign was found to be practically of no value in this series. It could be demonstrated in but one instance (a child of five years). The field of usefulness of this sign, as well as of

(1) Lyons, R. "Cerobrospinal Meningitis, with Special Reference to Certain Signs or Measures." Southern Medical Journal, February, 1914, Vol. VII., No. 2, pp. 87-91.

Babinski's, seems to be limited to meningitic affections of early childhood.

"Lastly, the presence or absence of the patellar reflexes was found to be of no apparent diagnostic or prognostic importance."

Since this paper was written an additional case of cerebrospinal meningitis has been observed, bringing the total to twenty-two cases. The average age for this series was 22.9 years. All patients were males and all but two colored.

Symptoms.—It should be kept in mind that in the present series we are dealing only with the sporadic form of the disease in adults.

While the disease usually sets in abruptly, it may be preceded, in many instances, by a naso-pharyngitis. The patients refer to it as a "cold in the head," and the symptoms are mild in character. Whether the coryza existed previous to the invasion by the meningococcus cannot be definitely stated. It is, however, believed by some observers (2) that local inflammation is incited by the meningococcus before it invades the general system. In this series ten cases, or 45 per cent, gave positive, and four negative histories of coryza. The mental condition of the remaining eight cases, the majority of which were fatal, precluded any reliable data.

Onset: The mode of onset in the majority of the cases was sudden. In a few instances premonitory symptoms, such as headache and anorexia, were noted for a day or two.

Three cases dated the onset of the disease to some form of trauma, such as a fall or severe jar. In such instances trauma presumably acts as an inciting cause by lowering resistance. It is interesting to note that two of these patients suffered with coryza previous to the traumatism. There was one fulminating case in the series. This was a boy of 19 years who was taken sick in the afternoon with severe headache, backache and vomiting: during the night he developed convulsions and was dead by noon the following day. Necropsy revealed cerebrospinal meningitis with a purulent pericarditis. The meningococcus was isolated from the spinal and pericardial fluids by Dr. DeMahy. No growth was obtained from the heart's blood. A case of this type fits in with the modern view of the primary invasion of the blood stream by the meningococcus with rapid subsequent localization in the meninges.

In six cases the symptoms at onset corresponded quite closely to those of the incipiency of many acute infectious diseases, namely: Rigors, fever, headache, backache, pain in the limbs, nausea and vomiting, etc. Vomiting was particularly frequent in the early stages though seldom met with later. In three cases the mode of onset could not be ascertained.

Headache.—Of the early symptoms the most constant and prominent was that of headache. This was present in every case. The headache is usually more marked than in most infectious diseases, although the intensity varies greatly from time to time. Its association with slight mental confusion is quite common, even in mild cases. The location of the pain was often frontal or vertical in the beginning, later being referred to occiput, neck and spine. General hyperasthesia was also quite frequently noted. Mental symptoms were found at some time during the disease in every case in the series. These ranged from irritability to coma. The mental symptoms presented on first examination in the twenty-two cases were as follows: Apparently normal, 3; irritable, 5; mentally confused, 4; delirious, 6; comatose, 4. In sixteen of these nineteen cases exhibiting mental symptoms, the average previous duration of the disease was 3.6 days. The date of onset could not be learned in the remaining three patients. Convulsions occurred in only three cases.

Fever.—Temperature was present in all but one case, or 95.4 per cent. The afebrile case was the fulminating one previously described. The remaining twenty-one cases could be

(2) Sophian, "Epidemic Cerobrospinal Meningitis," St. Louis, 1913, p. 45.

roughly separated into two groups, according to the type of the febrile curve. In the first group the fever was characterized by marked irregular intermittency. The curve suggested sepsis or intermittent malaria and has been occasionally mistaken for the latter. The only characteristic of this group is this extreme irregularity, which makes it impossible to predict what the temperature will do next.

Fourteen of the twenty-one cases, or 66.6 per cent, were of this type, which appears to be more common in the sporadic form of the disease in adults. Seven cases, or 33.3 per cent, fell into Group II, in which the febrile curve may be described as continuous, with remissions of varying degrees. In favorable cases the temperature dropped by lysis and rarely, by crisis.

Pulse and Respiration.—In the majority of the cases in this series the pulse was relatively slow as compared to the height of the temperature. Irregularities in rate were common. In eight of the cases the heart rate did not go above 100. Five of these patients recovered. In two cases the pulse ranged above 100 for the first three or four days, then becoming slower—both patients recovered. Five cases showed, from time to time, marked variations in rate. One of these was fatal. The pulse in the remaining seven cases averaged well above 100 and all terminated in death. Four had complications and one was admitted moribund. There were several instances of bradycardia (rate under 60). On the whole, irregularity of the heart rate with a tendency to slowing as compared to the temperature, was the most noticeable feature. Respiratory abnormalities were not frequently observed. This may be accounted for by the fact that most of the patients were not seen more than once or twice daily. Two patients presented the Biot type of respiration; both were fatal.

Eruptions.—Skin lesions were noted in thirteen of the twenty-two cases, or 59 per cent. The so-called typical spotted rash of the disease was seen in but one case. It should be stated here, however, that eruptions are not always easily observed on the colored skin. This case was a young mulatto of 15 years. He had a generalized petechial and purpuric eruption and, in addition, presented three large vesicles (bullae) on the inner aspects of both thighs and one arm. The boy died twelve hours after admission.

Herpes was the most constant skin lesion. It was found usually about the mouth, occasionally on other parts of the face. Ten cases, or 45.4 per cent, showed this lesion, and all but one of these on first examination.

Other skin manifestations were intense general cyanosis (lividity; this case complicated with specific pericarditis), maculo-papular eruption of the extremities with a few lesions on the trunk, general erythema and urticaria.

Ocular Symptoms.—Eye symptoms occurred in all but two of the cases, or 90 per cent, at some time during the disease. Photophobia was the most frequent symptom, being present in thirteen cases, or 59 per cent. In eleven of these cases it was found on first examination. The average previous duration of the disease was 3.3 days for the eleven patients.

In some patients photophobia seemed to be present on inspection, but careful questioning failed to disclose any sensitiveness to light. The eyes were kept nearly closed, due apparently to a condition of tonic contraction of the eye muscles. Five patients exhibited a mild suppurative conjunctivitis on admission. A culture made from one of these was positive for the meningococcus. Strabismus was noted in four cases. In two of these it was present on the second day of the disease and was associated with dilatation of the pupils. Inequality of the pupils was observed in only one instance. Dilated pupils were far more common than contracted. There is but one record of contracted pupils which was noted on the eighth day of the disease.

Summary of Symptoms.—(1) Of the early symptoms observed in this series, headache ranks first, being present in every case at

onset. The character of the pain, its tendency to involve the back of the head and neck, and its early association with vomiting, is most significant. (2) Next in importance is fever. This was present in twenty-one of the twenty-two cases, or 95.4 per cent. A febrile curve characterized by marked irregular intermittency appears to be the more typical for adults and was noted in 66.6 per cent of the cases. (3) Mental symptoms were observed in every case in the series at some stage of the disease. They were discovered on first examination in 19 cases, or 86 per cent. The symptoms ranged from irritability to coma. (4) Eye symptoms were found in all but two cases at sometime during the disease. Fifty per cent of the patients exhibited photophobia and 22 per cent a purulent conjunctivitis on first examination. Strabismus could be demonstrated in four instances, two of these on the second day of the disease. (5) The heart rate was noticeably retarded as compared with the heighth of the temperature, although variations in the rate from time to time were frequent. Fifteen cases were, in general, of this type. The remaining seven cases showed a fairly constant acceleration in the cardiac rate. Four of these cases had complications. (6) The true rash of the disease was seen in only one case, or 4.5 per cent. Herpes labialis was the lesion most frequently encountered. Nine patients presented this eruption, and all but one on first examination.

Diagnosis.—In a disease whose symptomatology and course is so complex and irregular as meningitis, the diagnosis must, of necessity, rest in the last analysis upon an examination of the spinal fluid. For, as Stokes observed many years ago, "there is no single nervous symptom which may not and does not occur independently of any appreciable lesion of the brain, nerves or spinal cord." A knowledge, then, of certain signs and symptoms whose presence would suggest the advisability of lumbar puncture is often the main factor in diagnosis. In the present series the first puncture was positive in twenty-one of the twenty-two cases (the negative result was due to a bloody spinal fluid through puncture of a subdural vessel).

The history of a sudden onset, not infrequently preceded by coryza, with severe headache, fever of an irregular character, slight rigidity of the neck, and often vomiting, should be regarded as highly suspicious. Especially is this true if examination of the blood shows a leucocytosis with a marked polynucleosis (noted in two cases of this series on the second day of the disease). In adults, moderate grades of Kernig's sign will very often be found in the early stages and less frequently Brudzinski's "neck sign." Irritability and mental confusion are important symptoms, though easily overlooked. Ocular and skin signs will, in some caess, give important confirmatory evidence. In young children probably Macewen's and Babinski's signs should prove of value.

1428 *First Street.*

SUBCUTANEOUS MEDICATION IN ANAEMIAS.*

By Mary King Robbie, M. D.,
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Medicines for general effect may be administered in one of the following ways:

(1) Hypodermatically.
(2) Endermatically.
(3) As a liniment.
(4) As an ointment.
(5) In the form of a suppository, per vagina or by rectum.
(6) By respiratory tract.
(7) By the mouth.

For the discovery of hypodermic medication, mankind is undoubtedly indebted in an over-

*Read by title in the Section on Medicine of the Southern Medical Association, Seventh Annual Meeting, Lexington, Ky., November 17-20, 1913.

whelming manner to Dr. Alexander Wood, of Edinburgh, who in 1855 published an account of his method of introducing liquor morphia into the system by subcutaneous injection. A book published in 1865, by Dr. Antoine Ruppaner, of Boston, on hypodermic injections in the treatment of diseases, leads me to believe that the author was the first writer on that subject in the United States.

The advantages of hypodermic medication are that certain results may be expected from the dose given. It enters directly into the circulation and consequently does not undergo any change or decomposition such as might take place if given by the stomach. Physiologic results are obtained much quicker than by any other method, and the increasing popularity of this method of administering certain drugs, or medicines, is due to the widespread dissatisfaction with internal medicine, particularly in anaemias and many types of malnutrition. The whole system is surcharged with poisons in these low grade diseased conditions, so much so that absorption of food is practically *nil*. The increasing belief is that almost all medicines when given internally are changed before final absorption and cannot, therefore, have the same effect they have when administered hypodermatically. We find that in lues our remedies are eminently more potent when so used, and progressive physicians are more and more looking for some method of greater persuasion and quicker results than the old plan of putting medicines of which we know little into the stomachs of which we know less. Literature records several cases where opiates introduced into the stomach to relieve severe localized pain have resulted in acute opium poisoning—not because the dose was too large, but because the gastrointestinal tract was not in condition to absorb the first doses given, allowing subsequent doses to become cumulative when absorption was resumed.

The brilliant results obtained in the treatment by this method of diseases like sleeping sickness, lues and malaria, encourage us to think that in the future investigators will find an ever-increasing number of specifics.

Dawes, in a very excellent article on "Hypodermic Medication in Modern Therapy," gives as a reason why physicians who advocate this method as being the correct one, and then persist in using the other, that in the minds of the laity and many physicians, the term hypodermic injection at once suggests the use of morphine for the relief of pain; for there is little doubt that nine out of ten physicians never use the hypodermic syringe for any other drug. Another reason is that the use of the syringe is more troublesome to the physician and the patient than the mere prescribing and swallowing of pill or tablet—the result, of course, being but a secondary matter. Then, too, the layman fears the pain from the needle and the inexperienced physician has unwarranted fears of abscess and other accidents. Many physicians are accustomed only to an antiquated leather-washered, necessarily unsterile and unsterilizable syringe, leaking from lack of use and with needles plugged with rust and dirt, and visions of malpractice suits float before their eyes.

In regard to the subcutaneous and intramuscular injections of medicines, there is a diversity of opinion among equally rated scientific men, many claiming for the subcutaneous method greater expediency in the absorption of medicine, and vice versa. In a report by Meltzer and Auer "On the Rate Absorption from Intramuscular Tissue" (rabbits), they state that absorption from intramuscular tissue is incomparably faster than subcutaneous tisse, and that the effect of intramuscular injection stands in value very near to that of direct injection into the circulation. The writer's observation with the two methods is, as regards the physiological action that they are exactly the same, the intramuscular being superior only in that there is less pain and irritation to the patient at the seat of the injection. My experience in sub-

cutaneous and intramuscular medication has been principally and chiefly in the anemias of malaria and those resulting from gastro-intestinal disturbances. The preparation I have been using is citrate of iron, gr. 5-6, sodium arsenate, gr. 1-6, and strychnine sulphate, gr. 1-120, put up in small sterile ampules and given once or twice daily as the case required. The rapid rise in hemoglobin following this treatment is remarkable in most instances. I do not, however, approve of the indiscriminate use of this treatment. My cases, selected, numbering 300, extend over a period of four years, and I have not seen it fail to produce at least 10 per cent rise of hemoglobin in thirty days The following cases are examples:

Miss B., age 30, a teacher by profession, was first seen November, 1910. Weight 120, extremely nervous and hysterical; no appetite and daily evacuation of bowels without any drug assistance. Thorough examination showed nothing abnormal except slight enlargement of one lobe of the thyroid gland. The patient had an idea that she had a prolapsed uterus. She had been treated by a woman osteopath for this condition for six months prior to my seeing her. Her pelvic appendages were absolutely normal, pulse 80, temperature normal, urinalysis negative. Examination of blood showed hemoglobin 45 per cent, red cell count 4,000,000; there was moderate variation in size and shape of cells. The patient was put on hypodermic twice daily of I. A. & S. At the end of one month she had gained 10 per cent increase in hemoglobin and 5 pounds in weight; at the end of three months she had gained 15 pounds in weight, the hemoglobin was 85 per cent, and she was able to resume her professional duties February, 1911.

Miss C., age 19, had had a recent attack of pleurisy. When seen she was still having a little temperature each day, with sharp, lancinating pain in the region of the right pleural limit. Had lost 17 pounds in weight in the two months prior to this attack. Was expectorating a little blood, had no appetite and was extremely nervous. I at first thought it was incipient tuberculosis. Examination of the lungs revealed a pleuritic friction rub, with deficient expansion on affected side. Pulse 80, temperature 99 1-5, running to 100. There was slight cough and only in the morning. Blood pressure was normal. The sputum gave negative results. Urinalysis was also negative. Examination of the blood showed hemoglobin 65 per cent, red cell count 509,600. Repeated tests for findings in the sputum gave negative results. Patient's chest was strapped with adhesive plaster and she was put to bed. Eggs and milk were added to the diet. Two injections per day of the iron, arsenic and strychnine were given. The temperature was normal at the end of one week. There was a gain of 5 pounds the first week, and the next three weeks the patient's weight remained the same. At the end of three months the patient had gained, all told, 10 pounds, and the hemoglobin was 85 per cent.

Miss K., age 36 years, weight 96¼ pounds; had never weighed 100 pounds in her life. She came to me suffering from anorexia, tired feeling and headache. Her temperature was running from 99 1-5 to 101 daily; had chilly feeling or chilly sensation about every ten days. Family history negative with regard to tuberculosis; lungs and heart normal and the spleen enlarged. Blood examination showed malarial plasmodium, hemoglobin 50 per cent, red cells 4,500,000. I placed her on one injection daily of the I. A. & S., alternating with three grains of sodium cacodylate. At the end of three months patient had gained 16 pounds in weight, temperature was normal and hemoglobin was 80 per cent. I must say, however, I gave her two grains of quinine every night. This I consider a remarkable case. The patient now weighs 120 pounds.

Miss H., age 19, weight 112, night long distance telephone operator; suffered from severe headache and lassitude; complained of vomiting her meals, after which she would feel perfectly well until next meal time. A careful examination for any signs of history of pregnancy was made. General examination revealed nothing but obstinate constipation. Examination of the blood showed hemoglobin 65 per cent. Castor oil was given every morning, with I. A. & S. daily; patient made a nice recovery in six weeks. This patient had previously taken tonics for appetite, etc., without much effect. Case diagnosed as constipation neurosis.

Mrs. B., age 25, chronic bronchial asthma. Digestion very poor, bowels constipated and very anemic. Was first seen February 26, 1912, and she had suffered continuously all the winter, one attack after another. Patient was placed on castor oil, two tablespoonsful daily; a restricted diet, hypodermic injection of I. A. & S., alternating with sodium cacodylate, three grains. I am happy to state that although the patient was under my care only one month, she didn't have a single attack

during the time and gained six pounds in weight and 10 per cent in hemoglobin. She claimed she was better than she had been in years. Since returning to her home in Tennessee she has gained five pounds more. She still continues the hypodermic treatment under the care of her family physician.

I always select as a site for these injections the thigh. Just anterior to the great trochanter, it is said, there is an area of two inches square in which a hypodermic needle cannot be felt on account of comparative absence of nerve filaments. It is not necessary to mention the need of absolute cleanliness in preparing the skin for the injections and in rendering the needle thoroughly aseptic; also the need of care that all air be excluded from the syringe.

REPORT OF A CASE OF MULTIPLE MYCOTIC ANEURYSM OF THE AORTA.

By Dr. H. L. McNeil,
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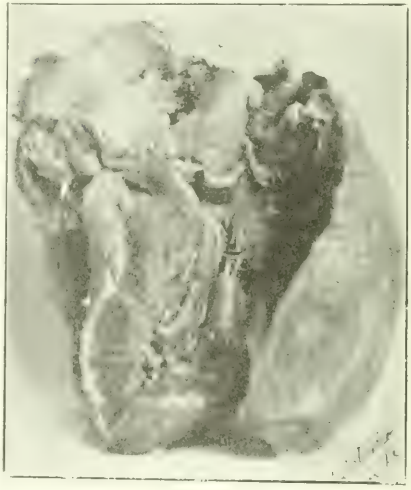
Only a few cases of mycotic aneurysm have been reported in the literature, and on account of the rarity and the difficulty in correctly diagnosing this condition, it seems to me that the following case is worthy of report.

Before taking up the case in question, however, I shall report briefly the few cases I have been able to find in the medical literature. Osler and McCrae, in "Modern Medicine" (1), describe a case showing multiple mycotic aneurysms of the ascending aorta in a patient suffering also with malignant endocarditis of the aortic valves. Holtzapple (2) in the *Pennsylvania Medical Journal*, reported a case (in 1911), which was thought to be typhoid fever, but which, at autopsy, proved to be mycotic aneurysm of the aorta. Neuber (3), in Virchows Archiv (1913), reports a case of mycotic aneurysm, occurring after puerperal sepsis. In this case there was also a fresh endocarditis. Emery, in the *Press Budapest*, reports a case of mycotic aneurysm of the pulmonary artery. Renon (5) and Weil (6) each report a case of aneurysm of the aorta of rheumatic origin.

Our case, a young Mexican laborer, age 22, was admitted to the hospital, complaining of pain in the chest, and fever. His family history was negative. Careful inquiry elicted no history of previous illness, except one attack of chills and fever several years previously. He had never had rheumatism, scarlet fever, pneumonia or typhoid. Denied specific infection. It was learned, on especial inquiry, that he had been subject to attacks of dizziness and shortness of breath after strenuous



View of ruptured mycotic aneurysm, showing "worm-eaten" appearance of aorta.

exertion, for the past two or three years. He had been able to do his ordinary share of labor as a section hand for the last eight months, however.

The present illness began about six days before admission, with headache, loss of appetite, pain in the chest and fever. On admission, his temperature was 101; his pulse 70 to the minute. Physical examination showed a well-nourished, fairly healthy looking man. There were a few scattered lesions on his chest and abdomen, resembling rose spots very closely, except that in the center of several there was a minute, cloudy vesicle. These spots persisted unchanged until the termination of his illness. The lungs were nega-

tive except for a few subcrepitant rales at the bases. On examination of the heart, it was found to be considerably enlarged toward the left. Left cardiac dullness was 4 c. m. to the left of the nipple line. There was no appreciable enlargement of the right side of the heart. No dullness was made out under the manubrium. There was a faint, short systolic thrill felt over the base of the heart. There was no diastolic shock. At the apex, the first sound was roughened, slightly accentuated and followed by a soft systolic blow, which was transmitted outwards to the axilla. At the base there was a to-and-fro systolic and diastolic murmur, the diastolic being soft and blowing in character, while the systolic was somewhat roughened, and occupied most of systole. The systolic murmur at the base was peculiar in that it was transmitted to the vessels of the neck on the right side, but not on the left. Examination of the abdomen revealed nothing except a palpable spleen. The white count was 7,300. The blood was negative for malaria.

A provisional diagnosis of typhoid fever in a patient suffering from a chronic cardiopathy was made. Malignant endocarditis was thought of, but was ruled out because of the low blood count, the slow pulse, and the character of the temperature. A blood culture was not made on admission, and we were just preparing to make one when the patient died. The temperature during the forty-eight hours of observation ranged between 100 and 101.5. The pulse ranged between 70 and 85, never rising above the latter figure, and usually remaining about 70 or 75 to the minute. There was no cough or dyspnoea at any time. The pain in the chest was constant throughout, but never became so severe as to demand any especial treatment.

The patient died suddenly on the morning of the second day, probably from excitement caused by the death of another patient in an adjoining bed.

Autopsy revealed a pericardium distended with blood. The heart was greatly hypertrophied, especially the left side. There was an old aortic stenosis and insufficiency, the aortic valves being calcified, but containing a few fresh warty growths. There was also an old mitral insufficiency.

On the anterior aspect of the ascending aorta, about 1 c. m. above the aortic valves, there was a ruptured aneurysm, about the size of a pecan, about 2 c. m. from this was a smaller unruptured aneurysm, about the size of a navy bean, and adjoining this one was still another about the size of a pea. The inner aspect of the aorta around these aneurysms presented an appearance best described as "worm-eaten." The whole wall had been eaten through and the aneurysmal sacs were formed by pericardium, reinforced by fresh thrombus formation. The aorta was elsewhere perfectly elastic and healthy looking, except for a few small beginning ulcerations in the vasa-vasorum immediately surrounding the affected zone. A few of these small vessels were occluded by fresh thrombi.

The autopsy revealed nothing else of interest except a large, soft spleen, and a slight general enlargement of the lymphatic glands. The examination of the intestines showed nothing suggesting typhoid or paratyphoid, the peyers patches being apparently perfectly normal.

Since, unfortunately, no cultures were made, it is impossible to say what the offending organism was in this case. (It has usually been found to be the streptococcus or the staphylococcus.) There can be no doubt, however, but that it was a malignant endocarditis, superimposed on a chronic endocarditis, and that an infected embolus, lodging in one of the vasavasorum, had been the direct cause of the aneurysm. The remarkable slowness of the pulse, the steadily elevated temperature, and the low white count, completely obscured the correct diagnosis. A blood culture, however, would probably have given us valuable information.

This is the third case of the kind which I have been able to find reported in this country, those of Osler and Holtzapple being the other two. The case of Holtzapple ran a course somewhat similar to mine, except that the pulse rate was higher, the temperature was more irregular, and the course of the disease was longer. The white count in Holtzapple's case was low also, being only 8,000.

The accompanying illustration will give some idea as to the appearance of the lesions.

In conclusion, I wish to thank Dr. R. W. Knox, Chief Surgeon of the Southern Pacific Lines, for permission to publish this report.

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CANCER OF THE TONGUE BASED UPON THE STUDY OF OVER ONE HUNDRED CASES.*

By Joseph C. Bloodgood, M.D.,
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This study has led to some very remarkable conclusions.

It has been demonstrated that the failure to cure when the cancer of the tongue is fully developed is due chiefly to the neglect to remove the muscles of the floor of the mouth below the cancer.

The high mortality after operations for cancer of the tongue is chiefly due to the removal of the floor of the mouth without removing at the same time a section of the lower jaw.

The investigation has also shown that if a lesion of the tongue is subjected to immediate operation within a few weeks after the onset of the lesion, the chances of a permanent cure are best. In this stage it will usually be sufficient to remove the local lesion with a good margin of healthy tissue, and this removal should be accomplished with the electric cautery. The centre of the lesion should be preserved for microscopic study. When this is done the chances are that the lesion will still be benign. But even though the lesion prove microscopically cancer, the probabilities of a cure are almost 100 per cent.

In the past surgeons have apparently performed too extensive operations upon the glands of the neck. Now, this is theoretically incorrect, because cancer of the tongue infiltrates into the glands of the neck through the floor of the mouth. Should the glands be involved and the floor of the mouth not removed, one could hope for little, if anything, from such an operation. If the glands of the neck are not involved, this does not preclude infiltration of the floor of the mouth.

When the operation is performed in one stage, it is impossible to remove the tongue, the floor of the mouth, the glands, and then close the opening in the mouth unless a section of the lower jaw is also removed. If the former operation is done thoroughly the mortality is very high—almost 80 per cent—from primary or secondary pneumonia, or late infection from the oral fistula.

The author was first impressed with these facts when it was found that the first cured cases were either cancers originating in the floor of the mouth, or cancers of the tongue invading the floor of the mouth, in which it was absolutely necessary to resect portions of the lower jaw in order to remove the disease. The extent of the disease, therefore, forced the surgeon to the more radical and mutilating procedure and allowed him to perform removal *en bloc*. During the same period earlier and more favorable cases were subjected to less extensive operations. When the floor of the mouth was not removed, local recurrences always followed, and when it *was* thoroughly removed the patients died from the operation.

In November, 1910, the author for the first time, in a favorable early cancer of the tongue, removed the right half of the tongue, the right floor of the mouth, the right half of the jaw and the glands on the right side of the neck, all in one piece. The wound was closed by suturing the mucous membrane of the right cheek to the remaining half of the tongue. The patient was able to swallow at once after operation, and no recurrence followed. The microscopic study showed that the floor of the mouth was infiltrated, but the glands were not.

As the removal of the lower jaw, especially at the symphysis, is mutilating, the author has

*Author's abstract of paper delivered before the American Surgical Association, New York, April 9, 1914.

attempted to accomplish the same results in a different way.

The glands of the neck are first removed and after the operation their connection with the floor of the mouth below the lesion is thoroughly burned with the cautery and the wound closed. Then the lesion in the tongue or floor of the mouth is attacked with the electric cautery. The application of this is usually repeated two or more times, until everything is destroyed down to the area of the first cauterization from below. The healed skin flap of the first operation forms the floor of the mouth and prevents an oral fistula.

The first operation after this method was performed in April, 1912—two years ago. The lesion was a cancer occupying the floor of the mouth between the tongue and the symphysis of the jaw. It was about the size of a silver dollar. Permanent cures have been accomplished in similar cases by *en bloc* dissection of the tongue, floor of the mouth, jaw and glands. The oldest case thus treated lived fifteen years, but the operation is very mutilating, and recently a patient refused to submit to it. This led the author to attempt what he had in mind for some years. At the present writing—two years since operation—there is no evidence of recurrence and no mutilation.

Since then four other cases have received this treatment with, so far, apparent success.

The majority of cases of cancer of the tongue seek surgical aid at an unnecessarily late period. In every case the patient is warned. There is always something to be seen and felt in the tongue or floor of the mouth. If such a lesion is investigated at once, a local operation with the electric cautery should be sufficient; in a later stage removal of the glands and repeated cauterizations of the mouth lesion; in still later stages resection of the jaw must be done. The author's recent experience seems to show that this operation should be done in stages; first, thorough removal of the glands with cauterization of the floor of the mouth from the neck wound; second, cauterization of the lesion within the mouth; third, removal of the lower jaw and cauterized area. These points will be discussed in detail with illustrative cases in the completed paper.

When the cases observed up until 1908—a period of eighteen years—are compared with those of the past five years, the influence of education is well shown. The very early precancerous lesions have increased from 8 to 30 per cent. The late and inoperable cases have decreased from 18 to 10 per cent. The cures have increased from 21 to 50 per cent.

When the author considers his own cases (fourteen in all), personally operated on by by him by these newer methods, in the past five years he finds that there has been no post-operative mortality, and so far but one patient is dead of recurrent carcinoma. In this case the lesion on the tongue had previously been subjected to operation, the recurrent tumor was extensive, and the glands of the neck involved.

In this group of cases every type of operation according to the newer methods just described is represented. At the present time there is evidence of recurrence in only one case; here, too, the lesion was most extensive and the operation most radical.

The experience with these fourteen cases proves the point as far as the immediate mortality is concerned, because considering *all* the cases studied, the post-operative mortality has been about 22 per cent. Since recurrences as a rule take place within one year of the operation, the results in the author's fourteen cases also demonstrate that the improved methods promise a much larger per cent of permanent cures, and certainly a longer freedom from recurrence.

We have, therefore, apparently conquered the technique of operations for cancer of the tongue. Now, if we can educate men to come earlier, we shall probably conquer the disease.

THE TREATMENT OF FRACTURES OF THE FEMUR WITH HODGEN'S SPLINT.*

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In so far as the description of the splint and the conclusions deduced from its use are concerned, this paper is almost identical to that read by us before the Tennessee State Medical Association in April last. Additional cases have been treated since that time and are incorporated in this report.

Although used by one of us* since 1906, no detailed history and final results were preserved and the twenty-five cases reported herewith have, for the most part, been treated within the past eighteen months at the Nashville City Hospital, St. Thomas Hospital and in consultation.

In presenting this method of treatment of fractured femur and allied conditions, we are not unmindful of the trend, more pronounced in some sections than others, toward operative treatment of fractures; and this method of treatment is offered for the consideration of both the surgeon with ideal surroundings and the general practitioner without them.

It may be said without fear of serious contradiction that many surgeons and most general practitioners approach the treatment of fractures with no little misgiving. The dislike for this part of practice may be assigned, as in many other phases of our profession, not so much to the lack of skill as to a lack of knowledge of the best procedure to adopt. Waiving this, however, we are conscious of the fact that an error in the treatment of fractures may be followed by permanent impairment of form or function of a limb which may not only seriously affect the patient's future, but be a constant source of chagrin to the physician.

It is with no sense of apology, therefore, that we would briefly call your attention to an appliance for the treatment of fractures of the femoral shaft. Though comparatively little used, it is at once an extremely simple and most efficient apparatus for the treatment of this condition. I refer to the Hodgen splint.

Case 8 at Time of Fracture.

This device is by no means new, it being a modification, conceived by Hodgen many years ago, of the old Nathan Smith anterior splint. The original Hodgen was difficult to keep in order, and it is due to Dr. George S. Brown, of Birmingham, Ala., that we have the splint in the perfected form as shown here. It is the original Hodgen splint and not Brown's efficient modification that we see pictured in most text-books, which only too frequently refer to the splint in the briefest manner (if at all), though in the main commendatory.

At a risk, therefore, of being somewhat tiresome, I shall briefly describe the splint, for a comprehensive working knowledge cannot be gained from most of the text-books on surgery.

*Read in Section on Surgery of the Southern Medical Association, Seventh Annual Meeting, Lexington, Ky., November 17-20, 1913.

Let me say in the beginning that any blacksmith or similar artisan can make the splint in a very few minutes if given the dimensions. The material is 3-16-inch brass or iron, or No. 4 wire, all in one piece. The distal extremity is six inches wide and the proximal eight inches, the ends of the latter being connected by an arch of such height as to pass well over the thigh. The length over all is 36 inches. On the top of the frame four loops of smaller wire are placed, those nearer the proximal extremity being nine inches from that end, while those toward the distal extremity being ten inches from its respective end. These loops are for the supporting cords or straps. Twelve inches from the proximal end the splint is bent to an angle of about 170 degrees. This angle will allow the limb to assume a position which gives most comfort, viz., that of partial flexion.

To the supporting loops are attached adjustable straps with buckles, or small cords equipped with tent blocks, and are passed through a ring about fourteen inches above the frame. The latter is attached to a rope or sash cord swung from the ceiling or some convenient support not connected with the bed.

A piece of ordinary unbleached domestic, or light canvas, is so attached to the frames as to form a hammock in which the limb is to rest. This is draped across so as not to form wrinkles and pinned on either side with safety pins.

The preparation of the limb is the same as one would adopt for the application of a Buck's extension; that is, the limb is shaved on each side, dried, and two-inch adhesive applied, extending well above the knee. The malleoli are protected and a spiral reverse bandage thrown around the limb, paying especial attention to the region of the ankle, as here the adhesive will loosen if not held firmly in place by the bandage. To the free ends of the adhesive short pieces of bandage are attached which are to hold the limb to the distal extremity of the splint. This will supply traction when the splint is in place and, in fact, is the only attachment the limb has to the splint.

The limb and the splint having been prepared, we are now ready for the application. With the limb in the hands of an assistant standing at the foot of the bed and making steady traction, the splint is slipped on the limb. the loop over the thigh, and passed well up to the perineum. The bandage which has been

attached to the end of the adhesive on the leg is tied to the cross-piece at the end of the splint. The splint containing the limb is now suspended on the sash cord hanging from the ceiling.

A pair of spring scales may be interposed between the rope and the ring for the measurement of the amount of traction; first weighing the limb and then moving the bed away from the point of suspension until an additional ten or fifteen pounds registers, which, of course, is the amount of traction imposed upon the limb.

The eversion is slightly over-corrected (as well as the normal longitudinal axis of the limb preserved) by adjusting the four straps or cords with tent blocks, as the case may be. The bed is pushed to one side so as to slightly

Case 8 after Treatment with Hodgen's Splint.

abduct the limb. The pull on the limb will have a tendency to drag the patient toward the foot of the bed, so the patient must be instructed to keep well up to the head. Indeed, he will soon learn that the constant traction of ten or fifteen pounds will overcome the muscle spasm and give more comfort when in the correct position, so this advice, as a rule, will not have to be repeated.

The splint at all times must be entirely suspended. Rest upon a pillow or bed will defeat every object of the appliance. After attention to the splint is nothing. An occasional adjustment of the supporting cords or straps is all, and this is required seldom.

The principle on which the splint works is as simple as the application and its maintenance. The femur is surrounded more completely and by large muscles than any other bone of the body. After fracture, gravity and muscular contraction give rise to the deformity. By supporting the limb in the hammock and preserving the normal axis of the shaft of the bone, gravity is overcome. By making constant and sufficient traction, not only is the muscular spasm overcome, but the muscle itself is paralyzed and the lower fragment of the fractured bone is gradually drawn in the axis of the bone to the place from which it came. The ham-string muscles behind and the quadriceps extensor muscles anteriorly form strong longitudinal bands when stretched taut and which efficiently splint the two fragments of bone.

From the beginning the patient may be allowed to sit up in bed with a back rest to eat, read, write, use the bedpan and move about to facilitate the changing of the bed linen. These may be done without the slightest fear of disturbing the bones at the seat of fracture, for when the body is moved the limb in the splint moves as a whole from the hip joint, the easiest point for motion to occur.

The application of this splint is by no means limited to the treatment of simple fractures. If it is efficient here, it is invaluable in treating compound fractures of the femur. A piece of the hammock may be cut across, unpinned opposite the wound and thrown to the opposite side when a dressing can be applied without disturbing the fragments.

All of us realize the dangers of a prolonged recumbent posture in the aged, which is necessitated by the ordinary treatment of fractures of the neck of the femur. The treatment of this condition with a Hodgen splint, by which we apply traction and rest, letting the patient sit up, is most satisfactory.

To summarize, then, we would say that:

1. The splint is cheaply and easily made.

2. It is easy to apply and easy to keep in order.

3. It gives the patient almost complete comfort during his six weeks in bed.

4. It may be used to great advantage in other affections of the lower extremity, notably fracture of the neck of the femur.

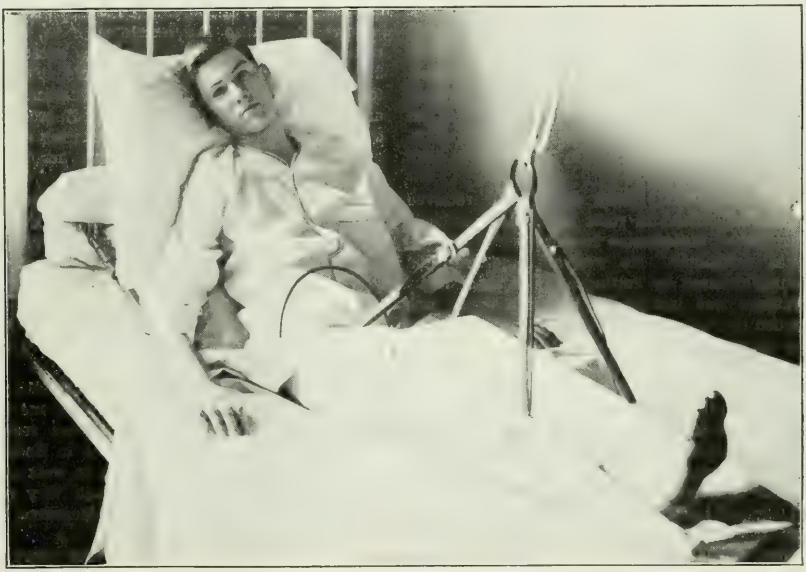
The results of the use of this splint will be detailed by Dr. McCabe in his review of the cases treated.

CASE REPORTS.

Case 1.—W. O.; male; age 26. Fracture at middle third of femur by direct force. Primary shortening, 2½ inches. Hodgen's splint applied for eight weeks. Perfect union without shortening.

Case 4.—S. B. W.; male; age 42. Fracture of left femur, 3 inches above knee. Primary shortening, 1½ inches. Hodgen's splint applied for six weeks with firm union and ¼ inch shortening resulting.

Case 5.—Thos. B.; male; age 14. He showed every evidence of inherited syphilis. He fell while playing, fracturing his femur at junction of upper and middle third. Primary shortening, 2 inches. Hodgen's splint applied for six weeks with firm union and no shortening. Patient received mercurial inunctions while in hospital. Saw patient six weeks after leaving the hospital and was walking with a slight limp.



Case 2.—R. W.; male; age 67. Fracture of femur at junction of upper and middle third. Primary shortening, 2½ inches. Hodgen's splint applied for eight weeks with firm union and no shortening.

Case 3.—Henry B.; male; age 23. Fracture of left femur at junction of middle and lower third. Primary shortening, 3 inches. Hodgen's splint applied for eight weeks with firm union and ¼ inch shortening. Three months later was walking with very slight limp and pursuing his occupation as laborer.

Case 6.—Duncan H.; male; age 40. Fracture of shaft. Patient is mentally weak and would not co-operate with us. Hodgen's splint was applied for four weeks, but patient would get it out of adjustment several times a day. At end of four weeks there was firm union. A plaster cast was applied and patient sent home.

Case 7.—A. R.; male; age 62. In August, 1911, he fractured upper third of right femur. His ankle of same leg was sprained also. Patient was extremely difficult to control. Was treated in Hodgen's splint for six weeks. Measured

April, 1913. No shortening found. Walks with slight limp due to stiffness of ankle.

Case 8.—Nathan G.; male; age 18. In November, 1912, fractured right femur, as shown by accompanying radiographs, just below the great trochanter. Was treated one week with sandbags and extension, consultation having urged operative interference, during which time he required three ¼-grain doses of morphine in 24 hours. Was put up in Hodgen's splint and morphine withdrawn on second day. After six weeks was sent home. Measured about the 15th of September. No shortening, and walks without limp.

Case 9.—Walter H.; male; age 22. A crazy negro whom we were unable to handle satisfactorily. He received a shotgun wound about the middle of right femur, producing a compound comminuted fracture. He was anaesthetized and injured tissue cut away. Drainage was instituted. Hodgen's splint was applied the following day, but was often taken off by patient. He left the hospital in twelve weeks with firm union, but still discharging pus. He had about ¾ inch shortening.

Case 10.—Jim D.; male; age 45. He received a gun-shot wound in right leg, which produced a compound comminuted fracture just below the great trochanter. He was anaesthetized, and wound cleansed by cutting away injured tissue. Drainage was instituted. Hodgen's splint was applied the following day. His wound discharged pus for three weeks, but at the end of the fourth week had practically closed. About the fifth week he developed a severe infection of the leg which resulted in gangrene. Hip joint amputation was performed, but patient died. Dissection of leg showed firm union with good alignment and abundant callous.

Case 11.—Pop T.; male; age 23. Received pistol shot of left thigh, fracturing femur just below trochanter major. Primary shortening, 2 inches. Hodgen's splint applied for eight weeks with firm union, and no shortening resulting. Have seen patient several times since and he walks without a limp.

Case 12.—John W.; male; age 20. He received pistol shot of left femur just below trochanter major. Primary shortening of 2½ inches. Hodgen's splint applied for eight weeks with firm union and no shortening.

Case 13.—Heywood T.; male; age 9. Simple fracture of left femur at middle third. Primary shortening, 1¼ inches. Hodgen's applied for five weeks. No shortening.

Case 14.—Lucille M.; age 7. In May, 1913, fractured both femurs at upper third. A double Hodgen's was applied for eight weeks. An obscure abdominal condition greatly complicated the case. She made a slow but complete recovery, there being about ¼ inch difference in the length of the two limbs.

Case 15.—Jim D.; age 12. Fracture of right femur. Primary shortening of 1 inch. Hodgen's splint applied for six weeks. There was lengthening of the injured limb of ¼ inch.

Case 16.—Mary P.; female; age 56. A frail, anaemic woman, who fainted and fell upon the floor, fracturing the right femur at the neck. Hodgen's splint applied for eight weeks with ½ inch shortening. One year later she shows the same amount of shortening and limps slightly.

Case 17.—Louise D.; female; age 68. Fracture of neck of left femur. Primary shortening, 2 inches. She was kept in Hodgen's splint for four weeks, when an intractible diarrhoea and an incontenance of urine developed, producing excoriation of buttocks and necessitating the removal of the splint. She left the hospital in twelve weeks with ½ inch shortening.

Case 18.—John F.; male; age 70. Patient was in a low state of vitality. He fell on the ice, fracturing the neck of right femur. Hodgen's splint applied, but patient died the next day.

Case 19.—E. W. P.; male; age 60. Fracture of neck of femur. Primary shortening, 1½ inches. Hodgen's splint applied for 8 weeks. Patient left hospital in three months with ¼ inch shortening.

Case 20.—Mrs. L.; age 68. Fell May, 1912, sustaining a Colle's fracture of right wrist and fracture of neck of right femur. Colle's reduced under anaesthesia, and limb put up in Hodgen's splint. In twelve weeks was able to walk about the house unaided. General health very poor. Has since died of failing heart. Measured February, 1913. Shortening ½ inch.

Case 21.—Mrs. P.; age 65. Three years ago fractured neck of right femur. Was treated with Hodgen's splint with shortening of ½ inch. While convalescent, fell, fracturing the other hip. This was also treated with Hodgen's splint. Report from her doctor states that she had no trouble with hip, but was unable to walk very much on account of joint changes in knees and ankles. This patient has since died.

Case 22.—R. D. L.; male; age 48. Fracture of neck of right femur. Several years previous had fracture of both bones of right leg. Patient claims there was some shortening previously. Measurement at time of fracture showed 2 inches

shortening. Hodgen's splint applied for six weeks with ¼ inch shortening.

Case 23.—Mrs. M.; age 55. Fracture of right femoral neck. Hodgen's splint applied for six weeks. Perfect function. No shortening.

Case 24.—Mr. W.; age 56. Fracture of right femoral neck. There was also a fracture of internal condyle of same femur. Hodgen's splint applied for five weeks. His doctor reports perfect function, but there was ½ inch shortening when he left the hospital.

Case 25.—Mrs. H.; age 65. Fracture of neck of left femur. Hodgen's splint applied for six weeks. She was a very nervous patient and refused to sit up in bed. A hypostatic pneumonia supervened. Her recovery was complete though prolonged. She now has good function and ½ inch shortening.

Of these twenty-five cases the ages varied from seven years (a double fracture of the femur) to seventy. There were two deaths, one a man of forty-five with a compound fracture from infection and hip-joint amputation, and the other an intra-capsular fracture in a debilitated old man of seventy, who died within twenty-four hours from the time of receipt of injury. We believe that both of these deaths cannot be connected in any way with the type of treatment used.

There were eleven simple fractures of the shaft of the femur, occurring in all parts of same. One (case 15) showed lengthening of one-fourth inch. In six (54.5 per cent) there was no shortening; three showed shortening of one-fourth inch; one showed a difference in the two limbs of one-fourth inch, both femurs being fractured, and in one the result is not known.

All of the four compound fractures were comminuted. One died of infection, but union was noted at autopsy. In two there was no shortening and in one, with rather extensive destruction of the bone, three-fourths inch shortening resulted.

In only one case of fracture of the neck was there no shortening. Two showed shortening of only one-fourth inch, while six showed shortening of one-half inch. One died. In all of the nine out of ten cases of fracture of the neck that lived, the functional results were good.

In view of these results, the simplicity of application of the splint and the comfort to the patient (which amounts to a life-saving measure in many cases of fracture of the neck in old people) we believe that Hodgen's splint is the treatment par excellence in fractures of the femur.

DISCUSSION.

Dr. Duncan Eve, Sr.—Dr. Hodgen, knowing that a double-inclined plane such as the McIntyre splint was not applicable for the treatment of fractures, especially high up—in the upper third of the femur—introduced a valuable device. Dr. Brown, of Birmingham, modified it, and I want to say that we are especially indebted to Dr. Gallagher for its use in Nashville. The fact is, Dr. Gallagher had a very extensive experience with the splint before moving to Nashville. There is no question, in my mind, that fractures in the femur, especially in the upper third of the shaft, have better results by use of Hodgen's splint than any other non-operative plan of treatment.

I believe this is the most comfortable splint that can be employed and there is less shortening by its use in the treatment of fractures of the femur than by any other method. With it we bring the lower fragment into apposition with the upper, and it is maintained in this position. We had occasion very recently to use this particular device in four distinct femurs at one time at our institution. One was a double fracture of the femur.

Plaster of Paris, when placed upon a fractured limb, loosens, and after a while there will be more or less motion and you have bad results—shortening from overlapping. Any other plan of treatment that is utilized, a fracture-bed or one improvised, must be employed, if for no other reason but for the use of a bed-pan. Hodgen's splint, to my mind, is the most ideal plan for the treatment of these fractures, especially of the upper third of the femur. As for the femoral neck, I have had no experience with Hodgen's splint. I have been using Whitman's plan of abduction and the results have been satisfactory. Dr. McCabe has had a great number of cases which he reports to us with most favorable results.

Dr. J. S. Turberville, Century, Fla.—I wish to call attention to a simple modification of the Hodgen's-Brown's splint. I had a blacksmith bend a gaspipe on itself to about the middle of the thigh and finished the length of the splint by bridging two pieces of small iron rod and slipping them in the ends of the gaspipe and fixing them with set-screws. We have to make the splint adjustable to the thigh. It can be used if it is too short, but not at all if it is too long. With this modification you have only to have one or at most two splints, because then you can

adjust it to any patient. It is possible to make the leg part adjustable also by two arched bridges on your gaspipe portion. The idea was suggested by a study of Dr. Brown's modification of the Hodgen's splint. Please preface this by saying that the original discussion was enlarged for the reason that it was mostly by indication on an apparatus present at the meeting, and to have been presented as it was taken by the stenographer would have been meaningless to the reader.

Dr. Jere L. Cook, Jackson, Tenn.—I had the pleasure of seeing this splint at Dr. Brown's infirmary several years ago, and I must say that I regret very much indeed that I was not more impressed with this method at that time.

At the last meeting of the Tennessee Society I was so much enthused with the results obtained with the apparatus as reported by Dr. McCabe that I immediately made up my mind I would test it at the first opportunity, and only eight weeks ago I had a patient who fell off a house, fracturing the left thigh at the upper third, rupturing the external ligament of the right knee and fracturing the right tibia and both bones of the left arm; so he was somewhat disabled as no one will deny.

This I thought a good chance to test this splint; so Dr. McCabe kindly sent me the splint, with full directions, and it was applied with particularly gratifying results. The man never complained of pain after applying the splint, although the line of fracture was two inches above the upper edge of the splint. I wrote to Dr. McCabe and asked if that would make any material difference and he assured me the action of the muscles on either side would form a perfect support.

I am glad the essayists have brought to our attention so simple and so effective an apparatus as Brown's modification of Hodgen's splint.

Dr. George H. Bunch, Columbia, S. C.—Ten years ago I spent nearly two years in Northern Michigan in the copper mining country. There I was in a hospital where we treated a large number of fractures of all kinds. The Hodgen's splint was used there in all cases of fracture of the shaft of the femur. I suppose while I was there I saw treated twenty-five cases, and the results were all that have been claimed for it by these gentlmen here today. The comfort of the patient is striking when compared with the ordinary fracture cases. The leg can be moved, the patient's body can be moved, and the stay in bed is really made fairly comfortable. Not only this, but in addition to the points brought out, the knee-joint is usually not nearly so stiff after this splint is used as after the ordinary splint, and there is no danger of any pressure necrosis, because there is only the cloth that supports the leg.

I wish to add my little testimony to the virtue of this splint. I think the discussion very timely, although the splint itself is old.

Dr. J. F. Gallagher, Nashville, Tenn.—In regard to Dr. Turberville's modification, we used this appliance in the hospital, and really think it unnecessary. We now use two sizes only. This model here (indicating) is for any adult of average size and the smaller one we use for a child, the latter being twenty-seven inches instead of thirty-six inches long. Really the application and the after treatment are so simple that in a recent case in Nashville the doctor told me, "That is no good; you have no dressing on the fracture." The patient's limb just stays there in the hammock and there is no fear of pressure necrosis, etc., and the results are sufficient, as we believe we have demonstrated.

Question: You say you have no dressing on the limb at all?

Dr. Gallagher: Absolutely none.

LESIONS OF THE SACRO-ILIAC JOINT.*

By Jesse P. Chapman, M.S., M.D.,
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The sacro-iliac joint, by reason of its peculiar anatomical construction and the ease with which its relation may be disturbed, more so than the other pelvic articulations, frequently becomes the site of very interesting and definite lesions. A knowledge of the anatomy and mechanism of this joint, resulting from comparatively recent study, will be found valuable for a proper interpretation of the symptoms of these lesions. The sacro-iliac articulation is an amphi-arthrodial joint, consisting as elsewhere, of bone, cartilage, synovial membrane, and ligaments, permitting a slight motion, which is a definite part of its function. The motion of the sacrum on the ilium is forward and backward, slight though it may be, with the center of motion in the transverse axis of the sacrum about its middle portion. The position of the sacrum is normally that of forward inclination, serving as a wedge in the pelvic girdle, to maintain certain framework relations, and to transmit the superimposed body weight through the pelvis to the pivotal heads of the femora. The articulating surfaces

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are parallel with the long axis of the sacrum, and possess no special facets or ledges as in other similar joints, but are more or less flat, so that the stability and support of the joint must depend upon the tension exerted by the soft parts, particularly the ligaments, fascia and muscles. This oblique position of the sacrum is the position of greatest strain, which seems to be one of the ills of the erect posture. Animals, having the body weight distributed over four legs, do not seem to be subjected to the same strain of the pelvis, for the sacrum acts as a true keystone in the pelvic arch, transmitting the strain evenly over the ilia to the heads of the femoral bones, and the sling-like action of the ligaments appears sufficient to compensate for it.

Being a true joint, it may become involved with processes the same as other joints. Tuberculosis of the sacro-iliac joint, or "sacro-iliac disease," is seen with a small percentage along with the invasion of other joints. Syphilis and malignant conditions may also be manifest here. Infectious elements, atrophic or hypertrophic processes, usually along with a general affection, may become localized in this joint, producing disturbance of function, with the usual joint symptoms. These conditions, however, are rare, so the present discussion shall be directed principally toward those more common lesions of a purely anatomical and mechanical disturbance. Lee in 1893 described certain symptoms referable to disease of or injury to the sacro-iliac joint, with an occasional displacement of the sacrum. Goldthwaite in 1901 called attention to the relaxation of the sacro-iliac articulation from a faulty acquired position of the sacrum, disturbing its function as a wedge to hold the pelvic ligaments in a proper tension. Since that time considerable progress has been made in establishing the true nature of these structural and functional disturbances.

Motion in the sacro-iliac joint in women aids in the normal physiological function of the pelvic organs. Sometimes, however, in pregnancy and in menstruation, the joint may become so relaxed as to become the cause of severe disability. Gynecologsts have observed that in pelvic diseases there is relaxaton of the pelvic ligaments, allowing too free motion, accounting for some of the discomforts of the back. Where there is marked ligamentous relaxation, certain strains, lifting, or slight accidents, passing unnoticed in a normal individual, may be sufficient to produce severe lesions in the sacro-iliac joint, traumatizing ligaments, and sometimes causing one or both articulations to slip. As an illustration, a woman in the latter stages of her pregnancy was out walking, and stepping down suddenly, she felt something "give way" in her back, later being followed by pain, which increased in severity, confining the patient to bed. Every motion produced pain. After treatment, she recovered from the injury and went into labor without any further trouble.

Postural defects undoubtedly are responsible for the existence of a tendency towards strain on the sacro-iliac joint. Normally in standing, the line of force of the body weight extends from the base of the skull, in front of the cervical curve, passing through the bodies of the lower dorsal vertebrae, striking the sacrum in its upper portion, and dividing, so that the force will be equally distributed to the pelvic girdle, which is balanced in equilibrium upon the pivotal heads of the femora. If the position is that of the "kangaroo" type of posture, as described by Dickinson and Truslow, there is constrant strain on the lumbar muscles, the spinal and spino-pelvic ligaments, and with the fatiguing of these structures, there is a tilting of the sacrum, disturbing the normal approximation of the articulating surfaces, and in this way a sacro-iliac strain is easily acquired. The same applies to other faulty postures. At night after the muscles have become fatigued relaxation in a flexed position will cause strain on the ligaments and pain will be frequently complained of in the lower portion of the back. This is observed particularly in individuals sleeping on very soft mattresses which sag under

the body weight. One patient in particular was relieved entirely by placing boards under the mattress. Prolonged sickness, necessitating recumbency, will produce discomfort in the back from strain on ligaments, especially in a sagging bed. Continued positions of stooping, standing or sitting, in which the muscles, first attempting to protect the joint, finally become tired out, and throw the work on the ligaments, so that in straightening, frequently there is a distinct discomfort referable to the sacrum. The strain may be relieved by voluntary stretching or hyperextending the spine, in which the relaxed joint readjusts itself, and corrects the sag.

In the more severe and acute conditions, there is more than a simple ligamentous trauma, in which greater injury has been done to the joint, probably with a dislocation. There is usually a history of a sudden strain or wrench of the back, such as lifting a heavy weight, cranking an automobile, playing in athletic contests, falls and the like. The individual is conscious of the injury, by a feeling of "something slipping" or "tearing" in the lower part of the back, which is followed by increasing pain and inability to bend the back. A chauffeur, while cranking his machine, experienced an injury to his back, but went on his way for a few minutes. Later, the pain, not severe at first, increased to the point of being excruciating upon every movement. Rest in bed did not give complete relief. The body gradually listed away from the injured side. A radiograph showed an abnormal sacro-iliac joint, with a slight subluxation. Under ether manipulation, a distinct click was heard, representing a reduction, and the patient was completely relieved of the pain. After several weeks of immobilization of the pelvis, the condition was relieved. The displacement of the sacrum may be either backward or forward, with a prevalence of the former, which produces a typical flattening of the lumbar region and a characteristic resulting scoliosis, in which the body is deviated from the injured joint.

In undue separation of the articular surfaces, voluntary correction may be possible in some cases by muscular effort in the erect position, but frequently the irregularities in the articular surfaces fail to return to their normal places, and are caught by other processes, holding the joint somewhat separated, impairing its normal function, and sometimes straining the ligaments of the opposite side. Large nerve trunks which cross the articulating surface may become irritated, producing pain along the course of its distribution rather than at the site of the injury. This may explain some of the sciatic conditions in which there is bodily deformity, which Sayre says are particular and characteristic of sacro-iliac disease. Strumpell mentons trauma, over-exertion of the legs, sitting for long time in uncomfortable seats as producing a sciatic scoliosis. It occurs more frequently in men of the laboring class, so that it seems fairly certain that many of the "sciatic scolioses" have as a factor in the causation disturbances of the sacro-iliac joint. Bucholz admits the possibility of such lesions producing a "sciatic scoliosis."

This strain or ligamentous injury often results from lifting weights without "getting fixed," which means that there was not the usual muscular contractions of the back giving additional support to the pelvic ligaments. Ordinarily one should have the back comparatively straight, with his arms close to the body, in order that the weight may be lifted more by muscular action of the legs than of the back proper. The further away the line of force is from the perpendicular at the base of the feet, the more liable is the weight to cause strain on the sacro-iliac and the lower lumbar joints.

The symptoms so characteristic of these lesions may be briefly summarized. Pain is constant and very characteristic, being more of an ache at the site of injury, or sharp and stabbing, upon movement of the back, and being referred along the course of the sciatic nerve to the external surface of the thigh, the knee, or even down to the ankle. Any motion that causes strain of the injured joint will increase

the severity of the pain. Coughing, sneezing and defecation aggravate the pain. Children may complain of leg ache, or back ache, and may be awakened at night with night cries from changing position in the bed. There is tenderness on pressure over the sacro-iliac joint, and one can frequently feel a distinct difference on palpation in the groove over the joint.

The attitude is characteristic. The spine is held rigid, using the hands in rising from the chair in order to lessen the motion of the back. The trunk is inclined away from the affected side, producing a list of scoliosis in an effort to relieve the injured joint of as much function as possible. All movements which flex the spine and strain the injured side are carefully avoided.

In examination, one notices that all spinal motions are markedly limited by muscular spasm on account of pain. Flexion of the thigh on the abdomen, the so-called sacro-iliac test, produces pain, due to the pulling of the hamstring muscles on their attachment to the tuber ischii, tilting the pelvis, and producing painful motion in the sacro-iliac joint. Hyperextension of the leg on the affected side will be found limited and painful.

Complicating the lesion may be an elongated transverse lumbar process, usually the fifth, which may be abnormally long, or thickened, striking the iliac crest at the time, forming a bursa or even a distinct joint. Radiographic examination and pain on rotation of spine towards the affected side will enable a differentiation. Lumbo-sacral strains may be either associated with or a confusing condition in an acute sacro-iliac strain. There may be even a displacement at the lumbo-sacral joint. Lumbar aponeurotic tears, which may simulate this condition, are usually seen in that anatomic type described by Painter as having broad shoulders, long body, narrow waist and hips, and small sacrum. Lumbago, true sciatica, low Pott's disease, hip disease and various pelvic conditions must be taken into consideration in a questionable sacro-iliac strain.

The treatment depends upon the degree of injury produced. Ordinarily, in the less severe cases of acute and chronic type, the treatment as of other sprained joints, of fixation and rest, will be found sufficient. Physiological rest by proper fixation is the logical procedure in order that the traumatized ligaments, injured articular surfaces, or infiltrated periarticular structures may be permitted to undergo repair. This is done by applying a low pelvis strapping of adhesive plaster, three inches wide, from the great trochanters to the mid-lumbar region, never extending further front than the anterior superior iliac spines, but firmly gripping the soft tissues, thus splinting the joint. It is well to place boards under the mattress and pillows under the lower portion of the back, and to keep the patient in bed for ten days or longer.

In the type with subluxation, relief is secured only by manipulation of the back under ether, restoring the joint relation, and applying a plaster jacket fixation, with a spica on the leg of the affected side. After removing the jacket ten days later, it is best to apply an adhesive support, and then wear for several weeks a pelvic belt, along with gradual exercises to restore the normal muscular tonicity.

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TUMORS OF THE CAROTID GLAND.

By John Funkhouser, M.D.,
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Before discussing the tumors of the organ, I would like to speak of the development and of the histology of the gland.

Already in 1881 Stieda called attention to a collection of cells which he thought were connected by means of a fibrous band to the mouth epithelium on the one hand and the thymus gland on the other. In embryos of 36 mm. the connection just named could not be found. In sheep embryos of 11 and 12 mm. the gland is first seen as a thickening of the posterior portion of the horizontal branch of the branchial cleft. Rabl found in mamifera and in birds that the endoderm of the third branchial cleft furnishes a diverticulum for the thymus and a dorsal bud for the intercarotid gland. Born is inclined to believe that the structure described by these authors separates from the parent body and then develops into accessory thyroids. Fischelis maintains that the carotid gland develops from tissue between the approximating ecto and endodermal layers and consequently does not arise from epithelial tissue. Katschenko takes the ground that the gland arises from a thickened portion of the adventitia of the internal carotid artery near the bifurcation of the common carotid artery and that the first evidence of the organ is seen in embryos of 14 and 15 mm., as an ellipsoidal body composed of a loosely woven, richly cellular connective tissue. That portion of the gland nearest the bifurcation of the carotid artery he found thickened, while at the opposite pole it was thinner in embryos of 30 mm., while in older embryos it was nearer the bifurcation. Katschenko thinks the structures described by Stieda, Rabl and Pierre de Meuron was the upper part of the thymus anlage. Paltauf's investigations led him to conclude that the organ arose from connective tissue structure. Borst and v. Heinleth agree with those views. Kohn holds the organ as of nervous in origin, maintaining that it develops from the embryonal ganglion cells of the intercarotid plexus.

The trend of opinion seems to support the views of Katschenko and Paltauf, with reference to the origin of the carotid gland.

HISTOLOGY.

It is held by many observers that the gland is not constantly present, and in my first paper on the subject I was inclined to say that it was frequently absent, but I now know it is more often present than I supposed when writing that paper. It is difficult to find and requires considerable skill in order to make dissections which will enable one to detect the organ.

The gland is most frequently found on the inner and posterior aspect of the internal carotid near the bifurcation, but it is occasionally found on the posterior side of the common carotid just below the bifurcation, and every now and then it is found on the inner and posterior portion of the external carotid, in which position it was found in some of my recent dissections. The gland ranges from 5 to 7 mm. in length and 2.5 to 4 mm. in width and 1.5 mm. in thickness.

According to Marchand and Schaper, the gland has a capsule and a hilum at which point the artery enters the organ. The capsule sends prolongations into gland by means of which it is divided into lobules, which are again subdivided by delicate strands and capillaries, which form small spaces containing the "Zell-ballen" of the German writers. Each lobule receives a branch from the main artery, so that the lobules constituting the gland correspond to the number of branches of the main artery. In the lobules the branches form a glomerulus-like structure which, according to Schaper, conforms to the architecture of the gland described by J. Arnold, who maintained that the essential part of the organ consisted of glomeruli which are formed of the capillary

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network. Paltauf, on the other hand, holds that the organ is not a typical glomerulus-like structure, but, he says, that in addition to the glomeruli there are large cells lying in close association with the blood vessels and at times lining spaces. Moenckeberg and Marchand have pointed out that the capillaries sometimes appear to penetrate the cells, an occurrence which I have frequently noted in my studies of the normal gland.

In the lobules and in the stroma are cells which differ from those already mentioned and to which Stilling applied the term "chromophile cells" because of their affinity for the chrome salts, and which have recently been described by Kohn, who called them chromaffine cells. The work of Mulon lead him to hold these cells responsible for the function of the gland, and he concluded that the carotid gland secretes a substance similar to that of adrenalin, in that it raises blood pressure. The extract of the carotid gland from horses injected into the veins of rabbits was followed by an acceleration and force of the heart beat. Cells similar or identical to the chromaffine cells are found in the suprarenal, coccygeal glands, in the hypophysis cerebri and in the abdominal sympathetic.

TUMORS OF THE CAROTID GLAND.

These growths are not all identical; they vary in size, shape, in consistency and in color. Frequently they are globular, but the shape, in a large measure, depends upon the tumor's attitude toward the vessels. If during the growth it spreads laterally it usually embraces these structures so that either the internal or external or both carotid arteries are imbedded in the mass so that the neoplasm may be lobulated. Reclus and Chevassu noted that if the tumor, as it grows, increases the carotid angle by pushing the internal and external arteries laterally instead of embracing the vessels the mass remains globular. In such instances the tumors usually rest upon the vessels.

The size, of course, varies with the rapidity and duration of development. The largest growth that I saw was 8 by 5 cm., and the smallest was 5 by 3.3 cm.

Some of these neoplasms are rather firm, now and then rather doughy, but most frequently they are soft. Recently I saw two growths, to be reported later, which were very soft. Some authors speak of them as being brain-like. Usually the shorter the duration of the growth the softer the mass. In those of long duration there is, as a rule, considerable fibrous stroma present as a result of which the neoplasm acquires density, which is directly in proportion to the amount of fibrous tissue present. The number and condition of the blood vessels also play a part in the production and maintenance of this feature of the tumors.

Encapsulation is present in all cases, although adherent to surrounding structures in most cases, occasionally the capsule is free. From the capsule bands arise and invade the underlying structure, acting as a framework. This supporting structure, in most growths, forms alveoli, the walls of which vary considerably in thickness. In some tumors these walls are composed of very delicate strands, sometimes they are composed of small capillaries. The spaces contain the tumor cells, which usually are rather large and polyhedral in shape. The protoplasm is finely granular, transparent, and the nucleus is comparatively large, ovoidal and contains a small amount of chromatin, which is scattered through the nuclear substance. The tumor cells are not always confined to the spaces, but are sometimes placed indiscriminately, resembling the disposition of the cellular elements in sarcomata. This was the character of the arrangement of the cells in the last growth that I saw. Occasionally they are arranged around blood vessels.

The source of the tumor cells is not definitely settled, but some authors hold they are derivatives of the blood vessels. Close studies of the growths which I have had occasion to

examine lead me to regard the tumor cells as arising from the blood vessels.

With reference to the diagnosis, these growths are most frequently called endotheliomata, but other terms have been applied. Recently I have learned that these neoplasms may be typical sarcomata.

CLINICAL MANIFESTATIONS.

Symptoms.—There is rarely any pain, dyspnea, dysphagia or cardiac manifestations. Occasionally there is alteration in one pupil, such as narrowing. Headache has been recorded.

The feature that brings the patient is the lump in the neck. The history indicates that usually the tumors developed slowly and may have been present for years; in one instance thirty-seven years and in another twenty years. The tumor may increase slowly and in the course of time assume a more rapid growth, thus greatly increasing an already existing deformity. In exceedingly large growths dysphagia may develop as a late manifestation. At this period there may appear alterations in phonation.

The most important physical phenomenon is the presence of the mass in the neck always located at the bifurcation of the carotid artery extending occasionally downward a little but upward a great deal, rarely sufficient to displace the auricle. The growth lies under the sterno-cleidomastoid muscle, hence the posterior boundary is not clearly defined. The movability of the tumor is limited owing to its intimate relationship with the vessels. The greatest amount of motion is in the lateral direction; vertical is very slight. Coloration of the skin is rare, but pulsation is frequently present, scarcely ever expansile. Reclus records feeble expansile pulsation in one case. A thrill may be elicited and a bruit frequently heard. The later manifestation is due to the alteration in the caliber of the vessels incident to the pressure of the growth on these structures.

Diagnosis.—These tumors must be differentiated from hygroma, tuberculous lymph adenitis, lympho-sarcoma, lipoma, bronchial cyst, aneurysm, ectopic goiter, Hodgkin's disease and fibroma.

Hygromata are more superficial and often fluctuating, at any rate softer than the tumors of the carotid gland.

Tuberculous lymph nodes when small are hard, and when large are usually soft, and may be fluctuating. They are, as a rule, multiple.

Lymphosarcoma are also, as a rule, multiple. They are soft, usually not pulsating, and do not evince a bruit.

Lipoma is rather doughy in consistency; usually more superficial, more movable and not pulsating.

Brachial cysts are congectial, more superficial, usually fluctuating.

Aneurysm; here the pulsation is as a rule expansile and the bruit is more distinct and the thrill more constant.

Should a goiter arise in the region usually occupied by a tumor of the carotid gland the microscope would probably have to make the diagnosis.

Hodgkins disease. The masses are usually multiple, are firm and bilateral.

Fibroma is, as a rule, more superficial, more movable and always firm.

The most important points to be borne in mind in the diagnosis of tumors of the carotid gland are: The location of the rather soft or rather firm tumor. The pulsation but no expansion and the bruit. The limited motion vertically and the little greater freedom of lateral motion.

Tumors of the carotid gland are not all equally malignant. Some may assume this feature early, but most of them do not acquire it until after years of growth. From the histological picture of the last growth which I saw I think the tumor is very malignant, at any rate conisderably more so than any of the

previous growths which I have had occasion to study.

DISCUSSION.

Dr. T. C. Hollway, Memphis, Tenn.—Seven or eight years ago a case came under my observation which presented all the clinical manifestations of tumor of the carotid gland. In making that statement I do not wish to convey the impression that the diagnosis was made at once. We didn't know what this thing was. The patient referred by a physician here in Lexington was a woman 35 years old, the mother of two or three children, apparently in good health, with the exception of this growth on the left side of the neck extending almost up to the ear and not connected with the thyroid; there was no expansive pulsation, and many of the characteristics of carotid tumor, as the essayist has pointed out, were present. She had difficulty in swallowing at times and choking attacks were becoming frequent. She would waken from sleep with difficult breathing, fear of death, and, all in all, was in a very distressing condition. After keeping her under observation for some weeks, during which time I had the advice of Dr. David Barrow of this city, it was decided to make an exploratory incision. In the meantime, after looking up the literature, I had discovered that there was such a thing as tumor of the carotid gland. It had escaped my attention up to that time, but I came across the report of Dr. Keen's case. We went into the operation with the understanding that if it should become necessary to ligate the large vessels and expose the patient to a very serious and dangerous procedure the operation should not be continued. The patient was operated upon at St. Joseph's Hospital, with Dr. Barrow assisting.

Previous to the operation the tumor had been shown to be very vascular; a hypodermic needle was promptly filled with blood; the tumor was compressible and could be reduced in size by pressure, but would soon come back to its natural size. In exposing the field great difficulty was encountered in controlling hemorrhage. From the description of the essayist it would be inferred that the procedure was not a trivial one by any means. The hemorrhage was so great and the blood vessels were found to be so intimately tied up in the mass, which was probably the size of an English walnut with the shell on, that after continuing the dissection so as to determine the exact location of the tumor and its relation to the blood vessels, an effort was made to close the incision. That proved to be a difficult undertaking, but finally the wound was closed and a little drain left at the lower angle. The tissues of the neck became infiliated with serum and a great deal of swelling resulted, and it seemed for two or three days that the patient would die. The prospect was particularly gloomy for me because she lived in my neighborhood and had two or three children and I anticipated the probability of seeing these orphan children every day. But in a few days the swelling subsided, convalescence was rapid, all the unpleasant symptoms had disappeared, and up to a year ago the patient was alive and well.

I presume she is well today. I made very careful notes of the case at the time. I was unable to get any section for examination of course. I sent the notes to Dr. Keen, whom I knew and whose article I had read.

He wrote me that the diagnosis was probably correct, but added a rather caustic criticism in regard to my going into any such region as that likely to be encountered here with any restrictions as to the extent of the operation. He thought I ought to have removed the tumor and found out what it was; but while I was smarting under that criticism I reflected that there was found by the pathologist one and one-half inches of the pneumogastric nerve attached to the tumor and his patient died some eighteen hours after operation. My patient is still alive, and I think, if the essayist and one or two other surgeons would like to see the case, I could get the good woman to consent to a private examination.

I have never reported this case because there has always been a question in my mind as to the exact nature of the tumor. I submitted the notes to Dr. Charles Mayo and he wrote me with the data before him that he was unable to say definitely what it was.

Dr. Funke closes.—With regard to the extent of the bleeding at the time of the operation, one realizes its greatness only by experience. Dr. Keen himself experienced the same thing. The bleeding is tremendous. After the operation our first case had an enormous swelling in the neck, which was largely reduced, but we had to open and drain the wound, yet the swelling was great even after drainage. The infiltration of blood was tremendous. The patient, after some time, got rid of that swelling in the neck, but you can never tell what is going to happen. The operation is rather serious. If you can show that the carotid arteries are not adherent well and good. It sometimes happens that the growth pushes up between the vessels without uniting with the arteries. The removing of the growth and vessels is quite a serious undertaking.

POST-OPERATIVE COMPLICATIONS OF ABDOMINAL SECTION AND THEIR TREATMENT.*

By Raymond Wallace, M. D.,
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Operations made within the abdomen, because of the anesthesia, the trauma, and the disturbance of physiologic function, necessarily are followed by certain symptoms and

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complications which are of great import.

Refinements of procedure and technic, however, have within the past few years so lessened the frequency of their appearance, that there should soon remain no complications to be dealt with except those inherent in the pathologic process under treatment.

An efficient anesthetist is of paramount importance to the surgeon, as well as to the patient. The minimum amount of ether which will secure complete anesthesia, and an operation performed as quickly as is consistent with thorough work, are fundamental. The anesthetist may flood the patient with ether, and despite the most dexterous technic of the surgeon, there may be distressing post-operative nausea and vomiting, thirst, renal insufficiency, pneumonia, a degree of shock, and, indeed, conditions favorable to sepsis. The most successful operators in the future, as today, will be unwilling to hazard their operative morbidity on unskilled and untrained anesthetists.

Team-work procedure in the operating room is of greatest importance. It involves the preliminary preparation of the patient, the emptying of the bowels and bladder, the sterilization of the operative field, the wrapping of the patient to preserve body-heat during operation, and the elimination of unnecessary delay by the immediate readiness of the surgical corps.

The speed, technic and comfort of the surgeon are greatly enhanced by having an assistant familiar with his work. I believe in most clinics the best results are achieved with one, or, at the most, two skilled assistants.

Abdominal surgery predicates a correct diagnosis and a proper technic in the disposition of the pathologic conditions found. To prevent unnecessary post-operative symptoms there must, first of all, be gentle retraction of the wound edges. Self-retaining retractors are perilous. They favor thrombosis of the mesenteric vessels, infection of wound edges, bad healing and consequent hernia. Persistent retraction of any sort without frequent shifting of the retractors should be avoided.

Rough handling of the abdominal viscera and needless dragging or pulling upon the mesentery favor both post-operative tympanites and abdominal pain and discomfort. Gentleness in the separation of adhesions so far as possible along natural lines of cleavage will lessen the number of new adhesions that will form, and reduce the incidence of pulmonary and cerebral emboli.

Complete hemostasis should always be sought. Whenever important vessels are ligated, if they cannot be thoroughly isolated, a suture should be introduced which will include enough *proximal* tissue to prevent slipping. It is rare now that any material other than catgut is buried within the abdomen for purposes of hemostasis. Capillary oozing readily yields to hot saline gauze. Sutures should be tied sufficiently tight to secure complete approximation, but without blanching the tissues distal to the ligation. In this way much subsequent pain, and indeed necrosis and sloughing may readily be avoided.

The future welfare of the patient is chiefly guarded by covering all raw surfaces with peritoneum. Where this cannot conveniently be done, so far as is possible, raw edges should be trimmed and inverted. Occasionally the omentum may be used as nature so often employs it to cover surfaces on the stomach, the liver and other viscera. In closing the peritoneum, the eversion of the edges by proper suture will leave a smooth intraperitoneal surface, which will give rise to no adhesions. Surgery even now is taking large account of the *remote condition of patient*, and as this becomes more common, no doubt a greater conservatism will prevail in the disposition of many intra-abdominal lesions.

The subject of drainage has filled volumes of surgical literature. If it can be determined in a given lesion, from the general condition of the patient that the peritoneum may

be depended upon to care for, unaided, any infection or leakage which may occur, it is safe then not to drain. But if there has been unusual contamination, certainty of leakage, or if there is evidence of active or virulent infection drainage should be employed.

The transit of the patient from the operating table to the bed should be made as gently and as quickly as possible. The body-heat should be conserved, and maintained by blankets and water bottles. I am confident that the administration of hot saline by rectum every three hours until liquids can be tolerated by stomach, materially restores the body fluids and enhances the well-being of the patient. With it, evidences of even slight shock are rarely apparent, thirst is at times materially reduced, the pulse volume improves and the kidneys are at once stimulated to normal activity.

In the last few years I have been in the habit of at once elevating the head of the bed in practically all abdominal cases. As soon as consciousness is complete, or within twelve or twenty-four hours, patients are placed high and comfortably with pillows on the back rest. This without doubt materially lessens the nausea and flatulency, and in all peritoneal and pelvic infections improves drainage.

Nausea and vomiting usually spend themselves before full consciousness returns. In some cases, however, persistent vomiting continues, and lavage by means of the stomach tube will become necessary. The patient is turned on the right side and the pharynx may be sprayed with 4 per cent cocaine. If the operation was an emergency, and the intestines unemptied, there may be regurgitation into the stomach and several lavages necessary.

Auto-lavage may be induced as soon as the patient calls for water by giving a full glass of hot water. He will then soon vomit it, together with much saliva, mucus and ether that has been swallowed as vapor. When the vomiting persists it is often reflex or of nervous origin, and a hypodermic of 1-6 grain morphine or 1-24 *grain heroin* will relieve it.

An ether gastritis characterized by burning, smarting and pain in the stomach is relieved by lavage, and doses of milk of magnesia, bismuth or bicarbonate of soda.

The pain and restlessness after celiotomies should be handled by no routine orders. The petty comforts of the patients, such as changing position, rearranging bedclothes, eliminating noises and darkening the room should receive careful attention. If there exists real pain and distress, morphine or heroin may be cautiously given. In the presence of peritonitis great caution should be observed until an adequate bowel movement has been obtained.

Urinary retention is frequent, and catheterization should be employed only as a last resort. In certain cases, such as hernias and plastic surgery of the perineum and rectum, it may be necessary, but the catheter should never be employed until all other means have failed. It is usually safe to wait for eighteen hours, or until considerable distress is apparent, when hot enemas or hot douches may be tried. I have followed Murphy's suggestion in several cases of massaging the urethra in women and the prostatic urethra in men, with good results. The injection of sterile glycerin through the urethra into the bladder often permanently relieves cases of ordinary retention.

Distention rarely produces marked discomfort when the patient is placed early upon the back rest. When not due to peritonitis it is usually promptly relieved by placing in the rectum for an hour at a time a hard rubber rectal nozzle. Often the rectal tube may be introduced several inches with marked relief. Lying upon the left side with legs drawn up more easily relaxes the sphincters. Soap suds with glycerin or turpentine as enemas often bring great and lasting relief. From my personal experience I am confident that crushed ice and ice drinks favor the forma-

tion of gas and should be replaced by hot drinks at least for the first twenty-four hours.

Shock rarely occurs now unless it pre-existed the operation, as in grave abdominal wounds or injury, perforated bowel from appendicitis, typhoid fever or gunshot wounds.

The elimination of the psychic element by the hypodermic of morphine and atropine preceding operation, the careful maintenance of body-heat, the gentle handling of tissues and viscera, the shortened time of operation by improved and perfected technic, the administration of the minimum of anesthesia, and the use of proctoclysis have removed shock very largely as a post-operative complication.

Anoci-association as devised by Crile may be employed with advantage in such cases as present shock before operation, or where from the condition of the patient or the nature of the operation it may be fairly anticipated.

Shock may be either immediate or deferred. If imminent, the cerebral anemia may be relieved by the Trendelenberg position, or elevation of the foot of the bed. The fall in the blood pressure in the peripheral arteries with splanchnic dilatation may, in a measure, be combatted by adrenalin, caffein, camphorated oil or strychnia. In shock, rectal absorption of salines is too slow to be of value, and hypodermoclysis or intravenous infusion should be employed where it is due to primary heart failure. The addition of salines to the circulation is contra-indicated, and should be withheld until the heart action has been improved by camphor, strychnia or caffein. The cautious hypodermic administration of digalen or strophanthin is at times spectacular in its action.

Hemorrhage produces collapse, which at times is difficult to differentiate from shock. Primary hemorrhage during operation is best combatted by effective hemostasis and the prompt administration of hypodermoclysis. Intra-abdominal bleeding, if not severe, responds quite readily to morphine, elevation of the foot of the bed, and perhaps bandaging the legs, thereby determining more blood to the vaso-motor center in the medula. If the wound can be reached, external bleeding may be arrested by packing with gauze saturated with Monsell's solution or adrenalin.

Thrombo-phlebitis, classed by the late Maurice Richardson as one of the "unavoidable calamities following surgical operation," occurs, as I have previously shown,* by an analysis of 21,170 celiotomies, in 1.2 per cent of all abdominal operations. The veins chiefly affected are the external iliac, the common iliac, the femoral, saphenous, and rarely the mesenteric and portal. It occurs in about one-third of all cases in myomectomies, and very frequently in clean cases without the pre-operative or post-operative presence of demonstrable bacterial infection.*

From our present knowledge there are two undoubted immediate factors: Traumatism of the abdominal wall, especially of the superficial and deep epigastric veins; and secondly, deep infection of the abdominal incision, or superficial infection through stitch abscesses, which is carried by the epigastric veins to the iliac and femoral veins, forming respectively a retrogressive or a metastatic thrombus.

Preventive treatment comprises early and adequate bowel action whenever possible, for the pressure of a heavily loaded sigmoid upon the iliac vessels might easily slow the venous current sufficiently to aid thrombosis. The position in bed should be frequently changed and passive movements of the extremities should be given twice daily. But, despite strict asepsis and avoidance of trauma at operation, there will still remain a few cases due to obscure constitutional dyscrasias and endo-venous infection, against which we have at present no available means of prophylaxis. It is indeed quite possible that at some future day metastatic infection may be demonstrated as arising from the mouth, lungs, kidneys and intestines.

Post-operative lung complications, bron-

*American Journal of Surgery, 1914.

chitis and broncho-pneumonia are fortunately becoming very rare. The statistics of the Boston Series (Munroe (1), Risley (2) and Graves (3)) comprising 3,089 sections, gave a mortality of 0.4 per cent, whereas Holmans (4) Statistics of 16,043 laparotomies from German clinics gave a mortality of 4.4 per cent. The lower mortality in America is no doubt due to the use of ether by the drop method, and more careful pre-operative and post-operative nursing. As a prophylactic measure careful attention should be given to the hygiene of the mouth, teeth, pharynx and nasal passages. The Fowler position, with frequent changing from side to side, lessens the possibility of hypostasis. It is probable, however, that occasional cases of embolic pneumonia will occur, without means of prevention.

For the first forty-eight hours following celiotomies there is usually some slight rise of temperature, a so-called aseptic traumatic fever, which is due largely to the absorption of certain ferments, fibrin, pepsin, pancreatin and solution of hemoglobin. This fever is of little consequence and may in reality be considered physiological.

An infective fever, due to the various staphylococci, streptococci, colon bacillus and bacillus pyocyaneus is frequently present, and when adequate drainage has been provided, the treatment is simple.

The management of septicemia depends upon the focus of infection. Drainage, either simple or multiple, of the abdominal cavity by means of rubber or glass tubes of good calibre; the exaggerated Fowler position; the combatting of toxemia by normal salt solution through proctoclysis or hypodermoclysis; free catharsis; the administration of whiskey and an easily assimilable diet, and the use of streptococcic serum, or autogenous vaccines, comprise the usual treatment.

In peritonitis with obstipation and paresis of the bowels, I have several times found an enterostomy under local anesthesia a life-saving procedure.

It is difficult within the confines of one brief paper but to touch upon these few post-operative symptoms and complications. Fortunately, the modern surgeon has constantly better surgical risks to handle, because the internist and the general public recognize more readily the surgical necessities, and cases come to the operating table earlier and better diagnosed.

The Elizabeth Apartments.

1. Journal A. M. A, 1909.
2. Boston Med. and Surg. Journal, 1910.
3. Ibid. 1911.
4. John Hopkins Bulletin, 1909.

RARITY OF CERTAIN VARIETY OF PERSISTENT HYALOID ARTERY, WITH REPORT OF A CASE.*

By Richard, M. Nelson, M.D.,
Atlanta, Ga.

In an interesting paper, read before the Chicago Pediatric Society, November 19, 1912, and afterwards published in *Journal American Medical Association* (1), Dr. L. M. Bowes reported a case of persistent hyaloid artery, giving, together with a brief review of the literature and the history and subjective symptoms, a detailed report of the eye examination and findings in this particular case, by Dr. F. I. Brown. Briefly abstracted his case was as follows:

A girl, aged thirteen, with history of persistent, severe headaches since early childhood. No ocular pain; poor vision, near and distant, left eye; a shadow moving before this eye constantly, though worse when right eye closed. Examination: Eyes normal externally except for mild conjunctivitis, except vision left eye 20-200 and ½ diopter astigmatism right eye, which Dr. Brown thought the probable cause of the severe head-

*Read in Section on Ophthalmology, Rhinology, Otology and Laryngology of the Southern Medical Association, seventh annual meeting, Lexington, Ky., November 17-20, 1913.

aches on excessive use of eyes. Ophthalmoscope showed persistent hyaloid artery left eye. This was attached posteriorly to the optic disk and projected as a slender, freely moving object in the vitreous, and extending a little over half way to posterior lens capsule.

Not being satisfied with above abstract, I am going still further, and quote verbatim that portion of Dr. Bowes' article in which he gives the classification of the various anomalies as given by Norris & Oliver (2). This classification is probably the briefest and clearest obtainable.

1. The whole artery, with a cellular sheath around the posterior part of it, may remain as in the fetal eye and continue to carry blood.

2. The artery may persist as a band through its whole length, but does not carry blood.

3. There may be a remnant of the artery attached to the optic disk which ends in a free extremity in the vitreous and in which there is also an opacity at the back of the lens. The remnant attached to the disk is often a long, thin cord which is seen by the opthalmoscope to lash about in an undulating way on movement of the eye.

4. The lenticular end of the artery may alone remain, its hindmost end being free and mobile in the vitreous. It is a variety which is rarely encountered. De Beck (3) could find only eight recorded cases of it.

5. The neural end of the artery remains, the lenticular extremity having completely disappeared. This is the commonest variety of any. With the ophthalmoscope a thin, narrow cord is seen attached by one end to the optic disk, the other end being free in the vitreous. The free end may be knob-like or tapering. It generally oscillates with an undulating motion on movement of the eye, but occasionally it is fixed and immobile.

6. The artery may become obliterated, but the sheath may remain as fibrous membranes or shreds of tissue attached to the optic disk, filling up the depression normally left in the nerve head by the divergence of the nerve fibers.

7. Little rounded bodies of a steel-gray color, which appear to be fluid-containing cysts attached to the optic disk, are ocasionally met as a congenital abnormality, and must in some way be connected with the fetal vascular apparatus for the persistent sheath of cystic distentions of the artery itself.

8. Some observers have seen appearances in the vitreous which they have thought pointed to persistence of the hyaline canal in which the artery lies, it and its cellular sheath having disappeared.

9. Many of the congenital opacities at the posterior pole of the lens are probably due to persistence of portions of the fibrovascular sheath of the lens, the vessels of which are derived in the fetal state from the division of the central hyaloid artery.

If the statement, credited to De Beck in the fourth paragraph of the above classification, still holds good, the case I will now report is the ninth one to be recorded of persistent hyaloid artery with the lenticular end alone remaining.

Patient—Mr. M., white, American, marine engineer, aged 30 (?). Admitted to eye ward Colon Hospital, Cristobal, Canal Zone, in early months of 1912. History of very poor vision, both near and distant, left eye all his life, while sight in right eye had always been good. A shadow present and moving before left eye constantly, with movements of eye. Had become so used to it, however, that it rarely bothered him. Two or three days prior to admission, while at sea, this eye developed certain symptoms that caused him to seek our aid.

Examination—Photophobia, epiphora, ciliary congestion and other evidences of iritis left eye, right eye being normal. No objective symptoms or previous history indicative of syphilis or of any previous eye symptoms other than those mentioned above. On account of the peculiar history given, it was believed that the ophthalmoscope might give some inkling as to the cause of the life-long poor vision. Accordingly, it was studied with that instrument under the good atropine dilation obtained. While, of course, the acute symptoms rendered the examination less clear than in the non-inflamed eye, still the following details were easily seen: From the posterior surface of the lens there extended into the vitreous to about one-third the distance to the optic disk an object rather thick and dense looking, but with its posterior end freely movable in the vitreous. These examinations and subsequent ones when the eye was free from all acute symptoms showed clearly the appearance of persistent hyaloid artery with the lenticular attachment alone remaining. The symptoms of iritis present on admission rapidly left within about ten days' usual treatment.

Whether the congenital condition rendered this left eye more susceptible to iritis, I would not presume to venture an opinion other than to say that it at least appears suggestive. At each of several examinations, at intervals of several weeks, glasses were not found indicated for either eye. Vision in both continued the same, being normal in the right and 15-200 in the left.

I wish to thank Col. W. C. Gorgas, Chief Sanitary Officer, Isthmian Canal Commission, for permission to report this case.

805-7 *Empire Life Building.*

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(1) Bowes, L. M., Journal American Medical Association, January 18, 1913, page 173, title, "Persistent Hyaloid Artery."

(2) Norris and Oliver: System of Diseases of the Eye, 1897, i, 454, as quoted by Bowes.

(3) De Beck: Persistent Remains of the Fetal Hyaloid Artery, Am. Ophthal. Monog., Cincinnati, 1890-1891, iii, 1, as quoted by Bowes.

DISCUSSION.

H. H. Martin, Savannah, Ga.—I think it too bad that such an excellent paper as that should go down without discussion, but there is so little to discuss. My personal experience with these conditions has been very limited and in the cases I have seen there has been nothing remarkable. But I think at least we should express our appreciation for the doctor's efforts and thank him for this most excellent report, which is both interesting and instructive, and, while there are not many points to discuss, I am very glad to have heard the paper.

J. W. Jervey, Greenville, S. C.—Personally I do not think these cases are so very rare; every now and then we see them. The only point is, the persistent hyaloid artery is not subject to alleviation. The eye must remain defective.

Richard M. Nelson, Atlanta, Ga. (closing)—As stated in the classification, that variety of persistent hyaloid artery in which the neural end remains is very common, but the variety in which the lenticular end remains is very rare. The case Dr. Bowes reported a year ago was one of the common varieties, and it was reading his article and the classification that he gave in that article that apprised me of the fact of the extreme rarity of the case I reported. Before that I did not know it was so rare.

CATARACTA COMPLICATA SIMILAR TO SENILE CORTICAL CATARACTS.

By Albert B. Mason, M. D.,
Waycross, Ga.

Fuchs describes cataracta complicata as those which occur as the result of other diseases of the eyeball. Most frequently they follow (1) perforating ulcers of the cornea and irido-cyclitis; (2) choroiditis, myopia of high degree, retinitis pigmentosa and detachment of the retina; (3) glaucoma absolutum.

VARIETIES.

Following perforating corneal ulcers of early childhood and ulcus serpens, there occurs a small round opacity situated at the anterior pole of the lens, under the capsule, which is called anterior polar cataract. It is often pyramidal in shape, in which case it is called pyramidal cataract.

As a complication of choroiditis, high myopia, diseases of the vitreous, retinitis pigmentosa and detachment of the retina, there occurs a stellate opacity of considerable size, situated in the cortical layer of the lens, at its posterior pole, which is called posterior polar cataract.

As a rule, both varieties remain stationary, though they occasionally become complete or undergo degenerative changes.

DIAGNOSIS.

It is of extreme importance to make a diagnosis of complicated cataract, as treatment and prognosis are different than in uncomplicated cases.

Those cases in which corneal ulcers have perforated, and there are adhesions between the lens and cornea (or iris) can be diagnosed by external examination alone.

In diseased conditions of the deeper structures of the eye, an ophthalmoscopic examination of the fundus, through the dilated pupil, will tell the story, in partial cataracts; and, if the cataract is total, the fact that it is compli-

cating other diseases of the eyeball is determined by the presence of a thickened capsule, by its being liquefied, or by a greenish discoloration of the lens.

Treatment is operative. Each case is a law unto itself, and should be handled by the operative procedure most suited.

Prognosis is unsatisfactory. It is always less favorable than in uncomplicated cases.

The following cases are reported because of their similarity to senile cortical cataracts:

Case 1.—H. A. B., aet. 29, came "to get some glasses" on September 21, 1913. He gave a history of eye trouble five years ago. Vision has been good up until a few weeks ago. V. R.—20-200. V. L.—20-30. Ophthalmoscopic examination showed a large central choroidal spot in the right eye, while in the left several small inflammatory areas were seen. Under homatropine with a plus 2.25 S. vision was 20-70 in the right eye, and with a plus .25 cyl. axis 90 degrees vision was 20-20 in the left.

Diagnosis: Old choroiditis right eye; recent choroiditis, left.

Treatment: Mercury and potassium iodide in ascending doses; glasses and rest.

October 30, patient returned with vision right eye of fingers at two feet. He has tested his vision almost daily and first noticed a change about two weeks ago. I examined his eye and found him with a posterior cortical cataract, which instead of having the usual appearance of these posterior opacities, namely stellate, had the exact appearance of senile cataracts. The streaks, which were narrow and tapered, ran from the periphery to the center like the spokes of a wagon wheel. Thinking that possibly some systemic condition existed, two Wassermann tests were made,* both negative; urinalysis; negative for sugar; fecal examination: negative for hookworm. It was by exclusion that the diagnosis of cataract complicating choroiditis was made, in spite of the fact that it developed so rapidly.

December 22. Patient can count fingers at six inches. The lens is a greenish color, more swollen than before, and the streaks are somewhat broader. Tension is normal.

This cataract formed very rapidly. In less than six weeks vision was reduced from 20-200 to fingers at two feet. I can account for this in no other way save that of rapid degeneration.

Case 2.—Mrs. P. F. D., aet. 28, came to me for a change of glasses on December 3, 1913. She is a dressmaker, and says she is unable to sew with her present pair of glasses at night. She is wearing minus .50 S., right eye, and minus .75 S., left eye. Under homatropine her refraction was:

V. R.—20-100 w. minus 1.25 S. combined w. minus .50cyl. axis 160 degrees—20-20.

V. L.—20-200 w. minus 1.75 S. combined w. minus 25cyl. axis 180 degrees—20-20.

Ophthalmoscope: Characteristic choroiditis of myopia, with posterior cortical cataracts. The cataract was made up of very narrow streaks running from the periphery towards the center. They did not run to the center, however, but stopped two m.m. from it, leaving a clear lens of between 3 and 4 m.m in diameter, which accounts for the normal vision.

Examination of the urine was negative, as was examination of the feces.

Patient refused a Wassermann, so mercury and the iodide of potash were given in ascending doses as an alterative. Diagnosis of cataract complicating myopic choroiditis was made.

December 13. Patient sews with comfort at night. Ophthalmoscopic examination same as before. I have advised her to change her occupation with the hopes of keeping her myopia from progressing.

224-26 *Bunn Building.*

*These tests were made before the iodide was given.

TYPHUS FEVER: A REPORT OF FOUR CASES.*

By L. B. Newell, M. D.,
and
Wm. Allan, M. D.,
Charlotte, N. C.

FEVER STUDIES FROM THE PRESBYTERIAN HOSPITAL, II.

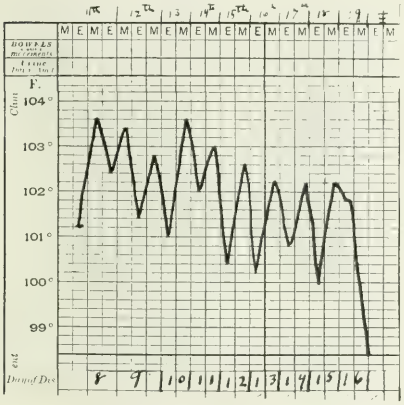
Two years ago we saw a case of continued fever with a profuse rose-spot eruption and leucocytosis of 12,500 in a young white man who had several months previously been inoculated against typhoid fever. We considered a blood culture for typhoid unnecessary, but could offer no satisfactory diagnosis.

In December, 1912, one of us (L. B. N.) attended a case of continued fever (Case I.) of fourteen days' duration, exhibiting a petechial rash and ending by crisis. The diagnosis of typhus fever was debated at the time, but did not seem justified on the evidence of a single case.

In December, 1913, one of us (W. A.) attended a case of continued fever, giving a history of anti-typhoid inoculation eighteen

months previously, exhibiting a general rose-spot rash with leucocytosis, and ending abruptly on the thirteenth day. The case was diagnosed an eruptive fever of undetermined etiology.

During the present year we have seen two more cases of continued fever of two weeks' duration, with general petechial eruption, with negative blood cultures and without abdominal symptoms, and ending abruptly. In view of Brill's (1) description of his fever cases in New York, of Friedmann's (2) remarks on their similarity to typhus fever, and of Paullin's (3) report of typhus fever in Atlanta, we

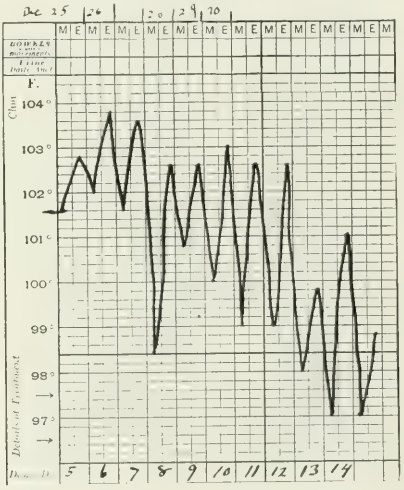


Case I.

have come to the conclusion that our cases should also be considered typhus fever.

For brevity, charts showing the daily variation of temperature are given, instead of the four-hour hospital record. In Cases II. and III. aspirin was given so freely for headache that the high-continued type of temperature curve was badly broken up and fails to show a typical crisis.

Case I. (L. B. N.) J. T. M., age 50, an American born policeman whose duties kept him about the police station where he came into more or less close contact with the wandering element, tramps, hoboes, etc.; became sick in December, 1912. Has always been well except for measles; never had typhoid. His present illness began rather suddenly with general aching, headache, slight cough, and loss of appetite. After three of four days he called the physician. When first seen the patient was complaining greatly of headache, general aching, weakness, and dizziness upon attempting to get out of bed. Appetite was lacking, bowels had been moved freely with salts. The face was flushed, eyes red, and he complained moderately of photophobia. The temperature was 103. He was seen once daily at his home for five days, during which time the temperature was constantly above 102. At this time the blood was negative for malarial parasites. No culture or Widal was made. On the fifth day he was removed to the Presbyterian Hospital. The fever curve from this date is seen in Chart I.

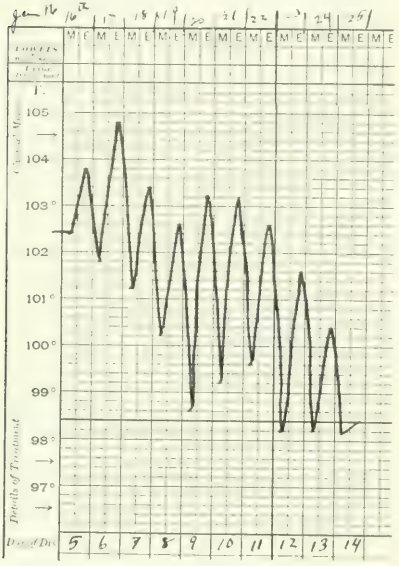


Case II.

Upon his arrival at the hospital, on the fifth or sixth day of his illness, there was noted upon the abdomen and chest a profuse rash very like the rose rash of typhoid fever. Soon, however, this rash had spread to the extremities and back. There were three distinct elements: A subcuticular mottling as if there were spots beneath the skin which had not yet become superficial; more or less typical rose spots, some of which disappeared under pressure, and a few petechiae. This rash came in a single crop and persisted until the crisis. Throughout headache was a prominent symptom; delirum was also marked. The suffusion of the face and conjunctivae was remarkable. There were no intestinal symptoms, the

bowels being constipated and distension, tympanites and tenderness were absent. The spleen could not be felt. The fever curve shows the crisis which occurred on the fourteenth day, after which the patient had no further elevation of temperature. Convalescence was quite rapid. It is worthy of note that a brother officer became ill at the same time and died in the second week of his sickness, the diagnosis being "typhoid fever."

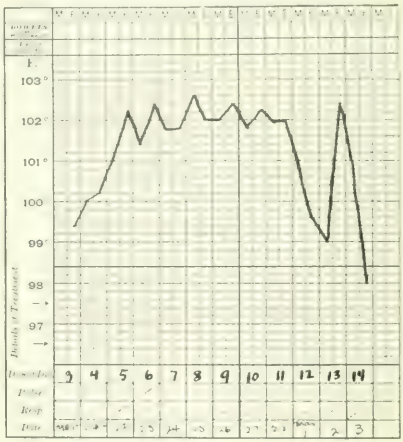
Case II. (W. A. 1128) M. R., white, male, native, age 34, single, cotton broker, was seen December 25, 1913, complaining of aching all over, es-



Case III.

pecially headache. He had had measles, no typhoid, but had been inoculated against typhoid in July, 1911. Case had not been out of the city since November 25, 1913. Present illness started December 20, with aching and malaise. Took two C.C. pills and next afternoon walked uptown and vomited. December 22 took two more C.C. pills, stayed up all night, and the next day stayed in bed. Yesterday, December 24, felt bad all day, and today is too weak to get out of bed. Has severe temporal headache on right side only, without soreness of the eyeballs. Has not caught any cold with this illness. Temperature 100.6, pulse 90, tongue covered with fine white coat but does not tremble. Body covered with fine, discrete, macular rash, resembling measles, and fading on pressure. Throat clear, no Koplik's spots, physical examination negative throughout. Given aspirin, phenacetin and caffeine every four hours and asked for a temperature record. White blood count 7,500 with polynuclears 80 per cent, small mononuclears 18 per cent, large mononuclears 1 per cent, eosinophils 9 per cent, basophils 1 per cent; reds normal, no plasmodia.

December 26. Headache relieved by medication before night, but by midnight temperature reached 102.8. The right eye felt as though it had a cinder in it during the night and lacrimation from this eye was profuse. This morning both eyes are injected and the headache has returned. Tempera-



Case IV.

ture 101.8, pulse 108, respiration normal. Tongue coated as before, physical negative, face, arms, chest, back, and thighs covered with rose spots which face on pressure. Sent to St. Peter's Hospital and put on usual typhoid regime. Chart II shows the course of the fever curve, ending abruptly on the morning of the fifteenth day. A note was made that the man looked more spotted than ever for several days after admission to the hospital, the rash retaining its original characteristics of discrete rose spots, fading on pressure, never becoming petechial. It finally covered the whole skin surface except palms and soles, fading gradually by the end of the tenth day. The face and neck were deeply flushed until the 12th day, and the conjunctivae injected until the 14th day. There was no appetite during the fever,

with nausea for several days. Bowels required enemata; no abdominal symptoms; spleen not palpable. No chest symptoms. Urine showed a small amount of albumin with granular casts while the fever lasted. On the 7th day of the disease the white blood count reached 15,600, on the 9th day 16,600, with 86 per cent polynuclears, and on the 14th day 16,000. The outstanding symptoms were a distressing insomnia, great restlessness, and continuous severe headache, which did not disappear until two days after the temperature had reached normal. There was mild delirium throughout several nights during the height of the fever, but never any meningeal symptoms. Appetite returned the day the fever subsided, and three days later the case was discharged.

Case III. (W. A. 1147). L. J., a Syrian, male, age 36, married, clothing merchant, was seen January 16, 1914, complaining of severe headache. Had typhoid fever for two months in 1900. Never had measles, but had been exposed several times when his children had it. Had not been out of the city in months. Present illness began January 11 with headache and a feeling of oppression over the front of the chest. Has taken salts and calomel and become steadily worse. Temperature 102.6, pulse 90, respiration 19. Tongue dirty grey with red tip. Physical examination negative. Covered thick over the trunk, arms and legs with rose spots that fade on pressure. Throat clear, no Koplik's spots. White blood count 5,400, with polynuclears 72 per cent, small mononuclears 24 per cent, large mononuclears 4 per cent, eosinophils 0 per cent; reds normal, no plasmodia. At 6 p.m. temperature 103.4, pulse 90.

January 17. Since yesterday has taken aspirin grs. 30, phenacetin grs. 9, caffeine grs 3, and has a temperature of 101.8 this morning, with pulse 90. Rose spots thicker on chest, back, abdomen, arms, legs, extending to backs of hands and feet At 3 p.m. admitted to the Presbyterian Hospital with temperature of 104.4, pulse 108, respiration 30. Blood culture taken by Dr. Barrett, which proved to be negative. The temperature curve is shown in Chart III, falling abruptly on the 12th day, with a slight rise in the afternoon of the 13th day. During the last week of the fever the temperature reached its maximum in the morning. The rash covered the entire skin surface except palms and soles, giving the man a mottled look. Many of the spots became rose-red blotches, 1 cm. in diameter, always discrete without the ring formation or bran color of measles. On the 9th day some of the rose spots became petechial; by the end of the 11th day the spots had faded leaving the scattered petechiae, which disappeared by the 14th day. The face was deeply suffused and the inner canthus of each eye injected while the fever lasted. There was slight coryza and bronchitis. No appetite. Milk, which disagrees with him, caused slight diarrhea and vomiting at the end of the first day in the hospital. It was discontinued, and thereafter enemata were necessary. Spleen never palpable. Urine showed albumin and granular casts while the fever lasted. The white blood count reached 8,600 on the 7th day of the disease, 8,000 on the 9th day, 9,400 on the 11th day with polynuclears 83 per cent. As in Case II, the prominent features in the clinical picture were distressing insomnia and severe frontal headache, continuing until the end of the 13th day. For the last few days of the attack an attempt was made to withhold analgesics for the sake of a uniform temperature curve which would show a crisis, but the headache caused such suffering that aspirin was again freely given. There were never any meningeal symptoms and no delirium. The case was sent home on the 16th day and convalescence was very rapid.

Case IV. A lady of the highest social status, whose family history is unimportant, and who had in childhood all the exanthemata, and at 15 years of age "walking typhoid," began suffering greatly with headache. Within 36 hours she was seen by one of us (L. B. N.). At this time she was complaining bitterly of headache, her conjunctivae were injected and the whole face suffused and appeared swollen. Her temperature when first seen was 99.4, pulse 80, no cough, no nausea or vomiting, bowels constipated, no abdominal tenderness or distension, tongue coated. Physical examination of heart and lungs revealed no abnormality. There was no coryza.

After 24 hours the temperature was 100, pulse 84, the head pain intense, facies unchanged. Removed to the Presbyterian Hospital. Chart IV shows the course of the temperature curve. On the fourth day there appeared on the lower chest, abdomen and back a rather profuse crop of what appeared to be rose spots. Within 24 hours this rash showed on the extremities, hands and feet, and even the palms and soles showed a subcuticular mottling, an appearance which became very evident over most of the skin surface. Some of the spots were very like typical rose spots, disappearing under pressure. Others there were upon which pressure had no effect. Four or five petechial spots were found on the arms and trunk. The rash persisted for 7 or 8 days, gradually fad-

ing, so that by the middle of the second week it was very little in evidence, though still seen on the trunk. The headache persisted throughout. The spleen was not palpable. The urine showed no abnormalities other than the changes found in a mild cystitis, from which she had suffered a week or two previously. There were no abdominal symptoms other than anorexia. White blood count normal; blood cultures made by Dr. Barrett during the first week of illness were entirely negative. The fever curve shows a distinct crisis on the 14th day. After this the patient was perfectly comfortable, with rapid and uneventful convalescence.

In these case histories we wish to call attention to the past history of measles and typhoid, the duration and character of the fever curve, the early appearance of the eruption and its character and distribution, the blood picture with negative cultures, the prominence of nervous symptoms, especially headache, the lack of abdominal symptoms, nose bleed, or enlarged spleen, and finally the abrupt termination of this continued fever by crisis, with remarkably rapid convalescence.

Commercial Bank Building.

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PRACTICAL SANITATION FOR SMALL CITIES AND TOWNS.*

By R. L. Robertson, M. D.,
Health Officer,
Charlottesville, Va.

In accepting the highly appreciated invitation to contribute a paper for this meeting of your association, I am actuated more by a desire to show my readiness to cooperate with your splendid work than by any feeling that I have anything new or valuable to suggest.

I come from a small city that lately is undergoing a great change, from a small country town it is fast becoming a modern city. Hence, when I invite your attention to "Practical Sanitation for Small Cities and Towns," I am speaking on a subject to which I have given my time and best thoughts for the past few years.

In approaching the subject of sanitation we can lay down as an axiom that an adequate supply of pure water is an absolute necessity—no amount of work will accomplish much for any town or city unless a pure and ample supply of water is procured. If this cannot be had, then it were better not to have the town. Having a water supply, perfect sewerage should follow as a natural and all important sequence.

With these two blessings the sanitary work of any town is easy, and is largely answered.

Unfortunately, a great many of our towns and small cities have very poor water supplies and nearly all very imperfect sewerage. This fact makes a hard task for health officers, the expense that has already been incurred for imperfect work makes an additional expenditure, generally requiring a bond issue, a most unpopular suggestion to the city authorities and the citizens at large. The opposition to incurring the necessary expense, though based in a great measure on ignorance and a lack of foresight, becomes very formidable when it happens that the city treasury is depleted. Health officers facing such a hopeless condition are too apt to become discouraged and cease to agitate a question which only tends to make them unpopular.

Just under such conditions communities need the services of practical health officers.

When we consider the dilapidated and unsanitary condition of earth closets in our towns and in the unsewered sections of our cities it is nothing less than an inexcusable disgrace to modern civilization.

*Read by title in the Section on Hygiene and Preventive Medicine of the Southern Medical Association, Seventh Annual meeting, Lexington, Ky., November 17-20, 1913.

Health officers should start a systematic crusade against this evil and never relax until proper sewerage is obtained. Let them insist upon sanitary closets being built and maintained in the best possible condition. Levy a tax upon the property owners, not the occupants, and in every way possible show the disadvantage of maintaining such a system. When sickness is due to polluted wells from this nuisance, publish it. By persistent agitation of the question the public can be aroused to demand a change, and the first great step in practical sanitation will have been taken. The importance of the unsewered districts cannot be overestimated from the standpoint of health. The inhabitants of these districts are nearly always of the poorer class, and from their general mode of living are more prone to disease. The health officer alone is in the position to demand justice for them. These nuisances are not fully appreciated by their more fortunate neighbors, and it is the duty of health officers to exhaust every means in their power to ameliorate and correct these disgraceful conditions.

When once the public mind is stirred up to the necessity of improvement, great care and discretion should be used to prevent hasty and unwise action. Many towns are suffering today from patch work in this line, and hence it is a matter of the greatest moment to see that in the future our systems are constructed in wisdom, and money not squandered in imperfect work, that has to be done over and over again. In order to accomplish satisfactory results, health officers should call upon the State Board of Health for guidance and help. Ask for the help of the State inspectors, the State engineer and the State bacteriologist. They can and they all will render the most valuable service in helping to solve all the puzzling questions that arise in perfecting a system of sanitation. Too much emphasis cannot be put on the necessity of a more perfect cooperation. All the forces in the State, at work on sanitation, should be focussed, so to say, on each town or city that has awakened to a better sanitary life, and great results will follow.

All sanitary ordinances and regulations should be studied and remodeled with the help of those that have had experience in this line and have been crowned with success.

The practical steps to be taken in insuring pure food and dairy supplies for the public, that has made us in a great measure the custodians of their lives, is a problem that calls for much wisdom, and still more for honest work and conscientious endeavor. The milk supply, the miscellaneous foods of the stores, restaurants and hotels, the meat supply, each opens a large field for work and must constantly receive the care and attention that the importance of the subject requires. Here again the State and the United States Departments of Agriculture are the best friends of the health officers. Their educated and specially trained men are always ready and willing to render assistance in all these lines, and without their help the best results are impossible.

A mistake is made in nearly all towns by having a too limited area of jurisdiction for the health officer. The zone known as the suburbs of a town is under the jurisdiction of the county. This zone badly sewered, badly policed and as a rule filled with nuisances to good health, is a dangerous and constant menace to the health of the town inclosed by it. On account of the public schools it furnishes foci for epidemics of all the infectious and contagious diseases. The quarantine regulations, though supposed to be carried out as strictly as they are within the corporate limits of the town, are seldom done so in practice. County officials seldom realize the necessity of the stringent health laws of the cities. In this area wells are used to a great extent, are often polluted and seldom examined, only, as a rule, when some serious outbreak of sickness frightens the people and makes them seek relief. Earth closets are neglected and become great nuisances, garbage is thrown in alleys

and low places, natural drains are stopped up and form marshy places breeding mosquitoes and miasma, while hog pens malodorous and unsightly are in close proximity to human dwellings. I do not think this picture is overdrawn for the suburbs of the average town of today in our Southern States. We all agree that it is a disgrace, and, gentlemen, it is full time that we, as public benefactors, put an end to such conditions. If the health officer of the town is also employed and paid by the county to do this work a step in the right direction will have been taken. The work and remuneration of the health office being enlarged he can afford to give his whole time to sanitation, while the county and city are both benefited by having one man with authority over both for the protection of all concerned. Quarantine regulations would be uniform, affording better protection to the schools, the policing of the premises would be insured, nuisances would be abated, and all the protection that the city has would be enjoyed by the residents of the suburbs.

The health officers of the Southern States have an opportunity today that has never been presented before and they should be as guardian angels to our new South.

The whole country is looking southward for homes and investments. Our undeveloped resources are inviting capital from all the more wealthy sections of the country. And the time is ripe that we should make it the healthiest as well as it is the fairest and the best.

Now, gentlemen, with one practical suggestion of how we can accomplish our end, I am through, with many thanks for your kind attention and appreciation of the honor you have done me.

As an army is organized, so must we be!

Let our State Health Commissioner be our Commander-in-Chief. Let the Pure Food and Dairy Commissioners of our States and the Department of Agriculture of the United States Government be our warm allies and friends. Let the States' engineers, inspectors and bacteriologists work with us shoulder to shoulder. When an epidemic is controlled and ended by the faithful services of our officials, let us celebrate their victory with publicity. When any great sanitary measure has been carried to completion by their help, publish it at home and abroad, by all fair means creating a public sentiment for better conditions, thus making our legislators give attentive hearing to our requests and suggestions. The success of our endeavors depends upon the enlightened support of the people. This support will only be given in the fullest, when we, with uniform demands and definite plans, work as a unit to obtain the results at which we aim. Mutual support and honest cooperation of our forces is the Alpha and Omega of practical sanitation.

ALCOHOLISM AND DRUG ADDICTIONS AMONG PHYSICIANS IN ALABAMA.*

By W. D. Partlow, M. D.,
Assistant Superintendent Bryce Hospital for Insane, Tuscaloosa, Ala.

I desire to bring to the attention of this association a matter which I consider exceedingly important, one which is already amply and wisely provided for, and one which is and has been grossly neglected by us, viz: "Alcoholism and Drug Addiction Among Physicians in Alabama."

What I shall say applies only to the class sufficiently extreme as to approach total incapacity and irresponsibility.

Situated as I am, it has been my duty for a number of years to treat quite a great number of cases of alcoholism and drug addiction. We are permitted to receive into the Alabama insane hospitals for treatment only those cases so extreme as to be declared in-

*Read before the Alabama State Medical Association, Montgomery, Ala., April, 1914.

sane by a court, and even of these we decline about half of those for whom application is made. This fact, together with the fact that there is a traditional timidity or hesitancy on the part of patients of this type and their relatives to resort to treatment in public institutions for the insane, makes me quite positive that the number of cases of alcoholism and morphinism treated by us represents a very small minority of the number requiring treatment for these conditions in Alabama. Yet, of these the high percentage of physicians has impressed me and aroused my interest in the prevalence of the use of alcohol and drugs in our profession. Of the total number of fifty-five such cases treated within the year of 1913, *eight* were physicians. In addition, I have been able to locate thirty-five physicians, residing in Alabama, who have been treated during the year 1913 for these habits in private institutions, making a total of forty-three. Now, assuming that not all habitues would apply for treatment within the same one year, and assuming further that I have been able to locate and tabulate not more than two-thirds of the number of cases treated within the year 1913, both of which are fair and reasonable assumptions, we believe that there were in Alabama last year not less than sixty-five licensed physicians suffering with alcohol and morphine addiction to the extent of requiring institutional treatment. Believing that 1913 was not different from other years, we are forced to the conclusion, however offensive and discouraging it may be, that we have constantly in our midst in Alabama physicians who are addicted habitually to these drugs, sufficiently to render them irresponsible and unsafe, to the number of about one hundred. Now, in this day of progressive and aggressive public health agitation, in which our profession must of necessity play the leading role, and of which eugenics, race improvement and conservation of brains is paramount, how can we hope to command the respect and confidence of the people to the extent of insuring their cooperation, parading our profession before them as their advisor and example, until we shall have had a house-cleaning ourselves. You may say we shall not assume to play that part? I say the statutes of Alabama place it upon us; there is no choice, no alternative but to go forward.

The legislature of Alabama has shown an almost unparalleled confidence in the medical profession of this State by enacting into law the ideas and plans relative to medical laws which our State association or its representatives have thought wise and proper to propose. These ideas, originating within our organization and coordinating with our plan of government and made law by legislative enactment, leaves to us, acting through our representatives whom we choose from among us, to determine not only who shall be admitted to our profession, but also to determine, by prescribed rules and for specified reasons, whether or not any member may remain in the profession. And, I may say, our medical laws very wisely prescribe equally as stringent requirements for remaining in the profession as those requirements for entrance. And wherever these laws provide us with a privilege they at the same time impose upon us a trust. We are obligated to a practical application of these laws "to the protection of the health and lives of the people" against whatever may jeopardize their safety in so far as lies within the prescribed confines of the law. Now, certainly in my opinion no condition of sanitation, no form of infection or contagion, the control of which is likewise within the domain of public health, can to a greater extent jeopardize the safety of life and health in a community than does a practitioner of medicine who is an alcohol or drug habitue to the extent of practical irresponsibility. During the past twelve years' observation I have learned to expect drug cases frequent and numerous from sections of the State where physicians of the same type are located. The chronics and neurasthenics in this way, I be-

here, frequently get on to drug habits. It has been estimated that 25 per cent of all drug addicts get the habit through physicians.

While the ethical element of pharmacists in the State are making such a commendable effort to see to it that the law regulating the sale of morphine and cocain, etc., is enforced and the type of druggist, or "dope peddler," who deals out these poisons is eliminated, our association would do well to cooperate with them in eliminating from our ranks a similar evil. One writer states that 4.45 per cent of America's population are drug addicts, a greater percentage than in any other nation on the globe; about .4 per cent greater than in China. At the present rate of increase, and taking into account the damaging effects upon the progeny of drug habitues, this great evil threatens, more than any other, the degeneration of our American civilization in the generations to come, if left unchecked, and it lies very largely with the doctor and the druggist to see that the laws are not violated and the "drug fiend" prevented from getting his intoxicant.

As I stated in the outset, this has been amply and wisely provided for. I quote from the Alabama Code, Section 1637: "The State Board of Medical Examiners may revoke a physician's certificate of qualification to practice medicine for any of the following: First, using spiritous, vinous or malt liquors or morphine, opium, cocaine or other stimulants or narcotics to such an extent as to render him unsafe or unreliable as a practitioner." And quoting further, Section 1638: "Whenever written complaint is made to the State Board of Medical Examiners that a physician has committed any of the acts, etc. . . . enumerated in the preceding section it shall be the duty of said board to hear and determine said complaint, etc.," as to whether a revocation is justifiable or not, the complete line of procedure being outlined by this Section of the Code. Then in Section 1640: "It is provided that the State Board of Medical Examiners may issue to such physician, either with or without re-examination, a new certificate of qualification whenever it deems such cause safe and just." Now, notwithstanding these legal provisions, our State Board of Medical Examiners can do nothing unless their attention is called to each case in the proper way. Therefore, since this is a recognized evil, which involves the safely of public health and life of which our association is the legal guardian for the people, is it not a duty of our county medical societies to see that each case coming within the class which I have referred to in their respective counties be properly reported to the State Board of Medical Examiners?

It is not fair, just or consistent to watch and guard cautiously the gateway into our profession, as is being very wisely and properly done, and at the same time to indifferently permit the public to be imposed upon by those who have become incapacitated and incompetent by reason of dissipation or drug addiction.

RESOLUTIONS OFFERED.

Whereas, We have reason to believe that Section 1637 of the Code, which prohibits the habitual and injurious use of alcohol and drugs by practitioners of medicine is being constantly and flagrantly violated in Alabama; and

Whereas, We recognize that such violation is not only dangerous to the health and lives of the people, but also is offensive to the profession; and

Whereas, We recognize it to be the legal duty of our State Board of Public Health (the State Medical Association) to protect the public by a fair, reasonable and practical enforcement of this section referred to above; therefore, be it

Resolved, by the Alabama State Medical Association, That each county society and the individual members of each county society, to these ends, be requested and urged to assist and cooperate with the State Board of Medical Examiners by reporting or seeing that reports are made in regular legal form of all such cases as may exist or may come to light in their respective counties; be it further

Resolved, That any county society failing to so cooperate in this important matter of public health

may be considered subject to censure and its officers and members derelict in duty.

Resolved, further, That each County Medical Society within the State be furnished a copy of these resolutions, together with a letter from the Secretary of this association, requesting that the resolutions be read at a regular meeting and outlining the purpose and intention of their adoption.

TREATMENT OF THE PUS APPENDIX.*

By George H. Bunch, M.D.,
Columbia, S. C.

Since Fitz, of Boston, in 1886, gave us his memorable treatise on appendicitis, the appendix has become universally recognized as the most prolific source of pathology demanding surgical interference in the abdomen. The medical profession, and through the profession the laity, have slowly learned appendicitis means the knife. That early removal is the only safe treatment is a surgical axiom now beyond dispute. The profession is to be congratulated on having educated the public to the danger of delay in this condition. As the years have passed and more and more appendix work has been done by the surgeon, the technique of appendectomy has been perfected until now one expects practically all cases operated upon before the appendix has ruptured to get well. Details in technique may vary with the individual operator, but the results are essentially the same with all good men. The clean appendix is practically a closed book in surgical accomplishment.

But when operation is delayed and the distended appendiceal wall gives way, the highly infected contents pour into the peritoneal cavity or infiltrate the retrocecal tissues, depending upon the location of the appendix. Nature reacts to this invasion in one of several ways. The presence of already existing adhesions from previous inflammation, the location of the rupture relative to the omentum and other viscera, the resistance of the patient, the virulence and nature of the infecting organism—are all determining factors in the outcome. Usually adhesions form around the rupture and a localized abscess results. But sometimes nature is unable to accomplish localization. The infection spreads and causes a diffuse peritonitis. When the appendix has ruptured surgeons are not so agreed as in the clean cases what operative procedure is most likely to cure the patient, nor are the results so satisfactory. Not only is there a decided increase in mortality, but there is considerable more morbidity. The observing Carolinian who visits the surgical clinics of the North is struck by the great amount of stomach surgery he sees and by the relatively few appendix cases operated upon. In the six volumes of papers published by the Mayo staff there are a score or more on the stomach, but not one dealing with the treatment of the appendix. So that it is pecularily fit that this subject should be of especial interest to this organization of Southern men.

The method of dealing with the ruptured appendix which I shall describe and with which I have had considerable experience, both as an assistant and as an operator, is not original with any one man. It is a composite method whose integral parts come from many sources, but whose perfection is largely due to Dr. Guerry, of Columbia. For eight years he has used it systematically in his work and it is the report of his series of cases that carries the weight of authority and experience for the operation. Before operation the patient with acute appendicitis or an appendiceal abscess should be kept in bed. The bowel should be kept, if possible, in a state of physiological rest. Neither food nor cathartics should be given. Even though there is constipation the patient is operated upon without enema. The abdomen is shaved on admission to the hospital and at operation the field is painted with half-

*Read in Section on Surgery of the Southern Medical Association, Seventh Annual Meeting, Lexington, Ky., November 17-20, 1913.

strength tincture of iodine. The anaesthetic is given with the patient on the operating table, dry and well covered with blankets. The future integrity of the abdominal wall demands, no matter where it may be located, that the incision be made in accordance with the muscle-split principle. No matter where the abscess be situated or how large it may be, is one often justified in cutting muscle fibers. The appendix is normally very movable, as it swings from the caecum, and its varies greatly in length. There is corresponding variation in the location of the appendiceal abscess. It may be contained in a roll of omentum in the right ileac fossa unattached to the intestine or to the parietal peritoneum. It may be entirely post-caecal and infiltrate the retroperitoneal tissue to the hepatic flexure of the colon. The tip of the very long appendix may become attached to the under surface of the liver and rupture causing a subdiaphragmatic abscess; it may rupture in the right kidney fossa and cause abscess there; it may become attached to the right tube or ovary and simulate pelvic inflammatory disease, or it may rupture between the coils of gut near the median line. In fact, the origin of the abscess may be anywhere within nine inches of the base of the coecum. The incision must be adapted to suit the condition in each individual case, but always according to the inter-muscular principle. The McBurney incision may be varied considerably in its origin and permits of extension even to the median line by splitting the sheath of the rectus and lifting its belly inwards. In suitable cases it is made in the flank or it may be made as high or as low as is indicated by the location of the inflammatory mass. A median or low right rectus incision may be used, the sheath of the rectus being split, its belly retracted towards the median line, and the peritoneum opened in the bed of the rectus so that its belly when replaced will cover the peritoneal incision. The incision must be placed so as to enable the operator to first enter the free peritoneal cavity and not the abscess. The beginning of the abscess is recognized by the oedema of the tissues and by the adhesions. A small retractor is cautiously inserted in the free peritoneal cavity from the inner angle of the incision and the abdominal wall is lifted well off the underlying viscera by the assistant, while the operator carefully walls off the peritoneum with Mikulitz pads, extreme care being used to prevent the premature rupture of the abscess and the flooding of the peritoneum with pus. The success of the operation and the life of the patient depend upon this toilet being properly made. The gloved forefinger is next carefully inserted into the inflammatory mass following the natural lines of cleavage. The assistant stands ready with a wet salt sponge to plug the opening into the abscess and prevent the gush of pus which usually comes with the break into the abscess wall. The pus is carefully mopped out of the abscess cavity and the appendix removed after a ligature has been tied about its base. Because of the induration there is usually no attempt at the invagination of the stump with the purse-string or Lembert sutures. Very exceptionally the appendix cannot be found without too much time being lost in manipulation and has to be left behind. Care is exercised that no secondary pus pocket in the pelvis or in the right kidney region is left undiscovered The abscess cavity is loosely packed with a cigarette drain of iodoform gauze and rubber protective. If the cavity be very large a rubber drainage tube is inserted beside the cigarette drain which should contain a strip of gauze for each pocket of the abscess. The Mikulitz pads are removed. The end of the drain is brought through a stab wound made so as to enter directly into the most dependent part of the abscess. The stab should be well to the side or in the flank so that the drain will not come in contact with the small gut and perhaps cause post-operative obstruction from adhesions. The omentum is pulled down and spread out so as to cover the small bowel and separate it as much as possible from the field of

operation. With clean instruments and clean hands, the primary incision is closed. Number 1 catgut is used for the peritoneum and the internal oblique muscle. The skin and the external oblique fascia are closed together with a few interrupted silkworm gut sutures. These allow some drainage between the sutures and the wound as a rule heals without infection. Essentially the same procedure is followed in the diffuse peritonitis cases. The appendix is removed and the pus is carefully sponged away, especially from the pelvis. The base of the caecum, the pelvis and the right kidney fossa are all drained with iodoform cigarette drains and the primary incision closed as before. Exceptionally, where there is much toxaemia and a general peritonitis, a Keith drainage tube is inserted into the pelvis on each side and the patient is put into the Fowler's position. All of the localization cases and most of those without localization are put to bed in the dorsal position and given an abundance of water by mouth. Proctoclysis is rarely used, even in the cases of general peritonitis. If the pulse is very thready, salt solution is given under the skin or into a vein. Morphine is used hypodermically to control pain and restlessness. A cathartic is given on the second morning after operation and when the bowels have moved the patient is given soft diet until the fourth day, when the gauze drain is removed and full diet given. There has been no hemorrhage at operation and there is no shock, no distention, no distress, no spread of infection after operation. The patient sits up on the eighth to the tenth day and goes home on the fourteenth day just as does a clean case. Exceptionally, there is fecal drainage, but the sinus has always healed spontaneously.

Up to October 25, 1913, there are in the series of unselected consecutive cases of appendicitis done by Dr. Guerry a total of 1,202 cases with five deaths, a mortality of 0.4 per cent. Of these 1,202 cases, 600 were chronic or interval cases and 237 were acute, making 837 operated upon before rupture and without any mortality; 265 were cases of localized abscess without a death; 96 were cases of diffuse or general peritonitis, with five deaths. Of these five, one died on the tenth day after operation of acute suppression of the urine, due to a double renal tuberculosis, after having been refused operation at the Hopkins; two were practically moribund at operation; and two died of general peritonitis. It will thus be noticed that the only deaths in this truly remarkable series of cases are in the peritonitis cases where there is no localization. It is on this very enviable record that we plead the merit of the operative procedure and the justification of this paper. We realize that the method differs in many respects from the ordinary accepted teaching on the subject. In Keen's Surgery, Murphy, in discussing the circumscribed appendix abscess during the first five days of the attack, says: "Shall we operate? Yes, but the operation must be a limited one; that is, simple opening of abscess and relief of pus tension in the infected area, with the removal of the appendix if it be accessible and easily amputated. There should be the least possible separation of the agglutinations or other trauma to the infected tissues, as agglutinations and adhesions are life saving both in circumscribing the process and in rendering the local tissues incapable of absorption. Many of the fatalities in operation for appenditicis have been due to the failure of recognition of these facts. Where the patient is apparently overwhelmed with the intoxication from a circumscribed or diffuse peritonitis or inflammatory process, we content ourselves with making a simple incision in the abdomen and relieving the pus tension by the insertion of a large drainage tube without irrigation, without sponging and without manipulation of the tissues." Binnie, in his Operative Surgery, 1912, in treating the large appendiceal abscess not adherent to the anterior abdominal wall, says: "If after cleaning the abscess cavity, we take out the filthy-looking protective packing and replace it by fresh gauze, we almost in-

evitably push into the peritoneum a large amount of infective material. The author, except when coerced by symptoms, leaves the protective packing in situ for a week or longer; the loose packing which drains the abscess, is, of course, changed as early and as often as may be necessary." And such examples of differences in technique in dealing with the ruptured appendix might be multiplied indefinitely. The patient operated upon by Murphy has a stinking, ruptured appendix left undisturbed and, when drainage finally stops after a prolonged convalescence, must still submit to appendectomy. The patient of Dr. Binnie, with the pads left in the abdomen for a week, must surely have a repair of his post-operative hernia.

By not just draining the abscess, but by removing the appendix, which is the pathology of the condition, by closing the incision and draining through a stab wound, thus obviating the necessity of a secondary appendectomy, Guerry, so far as short convalescence and permanent cure is concerned, makes the pus cases in effect clean cases. And all this he accomplishes with a lower mortality than is reported by those practicing other methods. The demands of modern times are so strenuous that the financial and physical strain of prolonged convalescence, with the doctor, the nurse and the hospital to be paid, cannot be borne by the average man. It is our professional and our moral duty to the patient to restore him to good health, with his pathology gone and his abdominal wall unimpaired, at the earliest possible moment. And in conclusion, allow me to say the method is so simple that it may be followed with good results by anyone familiar with abdominal technique and having ordinary surgical discretion. I believe that its low mortality, combined with its greatly lessened morbidity, must ultimately appeal to all operating upon pus appendix cases.

DISCUSSION.

Dr. E. B. Glenn, Asheville, N. C.—In case of pus appendix I always make the incision as nearly as possible over the center of the abscess. That allows a drop directly down near the center of infection and lessens the liability of breaking down nature's wall of adhesions, thereby lessening the chances of extending the infection. I often put through one or more silk-worm gut stitches down through the aponeurosis and fasten the two ends together to prevent them slipping out.

The drainage tubes are inserted through the incision, which I believe gives freer drainage than running the drain through a stab wound of the abdominal wall. I am of the opinion that unless a stab wound is made rather large, the muscles of the abdominal wall would interfere with the drainage by constricting the drain. When the drainage has subsided I coaptate the edges of the wound by tightening up the silk-worm gut ligatures that were placed in situ at the time of the operation. This procedure has always given satisfactory results and I have yet to have a single hernia following this procedure.

THE FIELD OF NEUROLOGICAL SURGERY AND ITS RELATION TO THE OTHER BRANCHES.

By Charles M. Remsen, M. D.,
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No other field of surgery is hampered so much by the lack of appreciation of what has been and is being done within its confines as that which deals with the nervous system. Brilliant and spectacular as its results may be, the past history of failures has left marks which are unfortunately being effaced slowly and with difficulty.

It is difficult to realize that almost every branch of surgery and even many of the everyday operations have gone through this same history, and that even the simple appendectomy was at one time considered a difficult procedure! Just as we are getting our carcinoma cases earlier and earlier as their seriousness is the more and more realized and their operative possibilities seen, so we are commencing to receive our neurological cases before irreparable damage has been wrought.

Tardy recognition of curable conditions and the inability to realize that they are successfully operable has been the great drawback up to the present time. How often we see symptoms entirely uncorrelated yet distinctly con-

nected with some very evident lesion yet treated fruitlessly as a cause rather than an effect where the real cause is entirely within the sphere of surgery. Neurological surgery must be looked upon with more optimism. Delay in calling in its aid is more frequently the result of unfamiliarity rather than of conservatism.

Consider the newer diagnostic methods, the latest methods of operative approach, and the improved technique in dealing with the conditions as met with; consider the ease with which cerebral, cerebellar and spinal cord exposures are performed, the extrusion method as applied to the removal of tumors, the results of posterior root division, the sellar decompressions in pituitary tumors, the numerous cases of blindness or dimmed vision cured by the simple cranial decompressions, and a host of other examples, and one cannot but be impressed by the fact that conditions are every day escaping attention in which operations, sometimes slight in character, would effect a perfect cure, or afford, at least, a marked alleviation of symptoms.

Formerly ruptured intracranial vessels were allowed to bleed, to compress and damage the brain, to end in death possibly, or the contused edematous brain allowed to expand with a similar serious result. Now we are able to locate the cause, and knowing the results, often permanent, if not fatal, we are able to avoid these by simple decompressive procedures and exploration, allowing the brain room to expand without damage and the hemorrhage to be controlled. Then again we recognize the late after effects of such injuries, perhaps associated with small depressed portions of the skull cap—Jacksonian epilepsy, low grade mentality or paralyses—and, by careful treatment of the cause, we may avoid or even cure such sequelae.

The brain is not viewed enough with a pathological eye until the autopsy table is reached. Dimness of vision, that most spectacular concomitant of general and localized intracranial conditions, the result of increased intracranial pressure from more distant tumors or of the local direct effect upon the chiasm by the various forms of interpenduncular tumors, pituitary enlargements and others, is now assured its place in the syndrome and is often recognized as our first objective symptom. Operative removal where this is possible, relief of intracranial pressure in the other event, will time and again show a startling return of vision to its normal state.

Intracranial abscesses, often elusive, even unsuspected, though an associated discharging ear literally may be pointing to the lesion, may now often be localized and evacuated with the success which follows similar procedures upon purulent accumulations elsewhere in the body.

Sinus thrombosis, allied in many respects to the previous conditions, yet often more clear-cut in its symptoms, a condition of which we have been fearful, may, by the combined intracranial and cervical operative procedures, be removed into the sphere of curable affections.

The treatment of hydrocephalus, though in its infancy as compared to the treatment of many neurological conditions, is showing, nevertheless, as the mechanico-pathological concepts of this condition have improved, marked strides forward and cures, partial and complete, have followed the application of several of the more logical means of treatment. Yet it is safe to say that this condition is rarely given a thought as far as operative interference is concerned.

Epilepsy, often merely a symptom of well-defined local lesion, a tumor, cyst, dural adhesions, depressed fragments of bone or other removable causes, comes more and more into the sphere of surgery, where the simple osteoplastic skull flap affords the approach and the application of better surgical principles, suffice to successfully remove the cause.

Pituitary tumors, either in their relation to the general symptoms, on the one hand, of underdevelopment, infantilism sexual impotence, adiposity and the like, on the other, of

gigantism and acromegaly, or, in their relation to the local symptoms of increased intracranial pressure—nausea, vomiting, headache—or to the dimming of vision or blindness and the characteristic alterations in the visual fields due to the relation of the tumor to the chiasm, have wtihin the last few years become well recognized and have turned from the absolutely inoperable into the realm of successful operations.

Trifacial neuralgia, an affliction to which many suicides may be credited, so painful is it, is now cured absolutely and for all time by the exposure of the ganglion semilunar and the breaking of the continuity of the sensory paths on their way from the face to the brain.

Apoplexy—spontaneous cerebral hemorrhage—whether it be meningeal, intracerebral or ventricular, has a very grave aspect, yet it is unnecessary to mention the success with which meningeal hemorrhages are now treated. What of the intracerebral, the capsular hemorrhages with their far-reaching paralyses? Pathology shows us that these hemorrhages not infrequently press out through the cerebral cortex with little or no destruction to the brain tissue. Removal, then, of the clot and allowing the brain to expand under the increased pressure seems, then, to be the ideal procedure, yet, until lately, little practiced. In one of the latest reported cases exploration revealed in the unconscious patient blood which forcibly broke through the cerebral cortex on opening the dura and several clots and a large amount of liquid blood escaped into the field through the cortical opening. Immediately the condition improved and the employment of drainage resulted in the patient being up and walking in four days. Ventricular hemorrhage, not rarely the cause of death from "causes unknown," is likewise amenable to treatment by tapping. When one considers the lasting effects, either immediate and fatal or the paralyses and mental changes which follow these hemorrhages, it is truly remarkable that this field has been opened such a comparatively short time.

Infantile hemorrhages, often followed by spastic diplegia and idiocy and the result of birth trauma to a great extent, can be and are treated with excellent results and similarly to the like condition in the adult, and it is to be regretted that the feasibility of operative procedures on the infant is so little comprehended. Personal experiences have forced me to the belief that reactions from operative measures are only slightly greater in infants—with a certain class of long, tedious operations excluded—than in older subjects, under proper conditions.

Meningitis, like purulent inflammations elsewhere in the body, are being recognized as subject to the same principles of treatment as the latter. Drainage and relief of pressure, the latter the cause of many of the symptoms, being recognized as the logical method of dealing with this affection, it has only remained for various operative procedures to be developed to allow us to treat many of these once practically non-combatable conditions by the various combinations of decompression, drainage of the cystern magna and counter drainage through the laminae. The result has been the purulent inflammations of the brain and spinal cord have approached very closely the same footing as treatment of purulent inflammations elsewhere, as, for example, in the peritoneal cavity, and the dangerous pressure symptoms are combated in a logical manner.

Simple lumbar puncture is of inestimable value in the diagnosis of cerebro-spinal affections, pressure changes, of the various kinds of hydrocephalus, and in the treatment of many of their afflictions.

Spinal cord conditions, later perhaps than analogous conditions in the brain, are now a recognized part of the neurological surgeon's work. Laminectomies with exposures of the cord have reached a high degree of perfection, and this together with the methods which have made possible the localization of the various lesions of the cord and the more recent meth-

ods of dealing with lesions when exposed have brought this field of surgery to its present status.

Tumors of the cord, cysts, tumors of the spinal meninges and skeleton, depressed fractures of the column itself or partial dislocations—conditions analogous to skull and brain conditions—are meeting with a measure of success almost unbelievable. Cord contusions, often associated with hemorrhage, edema and meningeal hemorrhage, frequently leading to permanent paralysis, if untreated, are subjected more and more to exploratory operations, spinal cord "decompressions," with results as brilliant as similar procedures upon the brain.

Tuberculous paraplegia—the paralysis of Potts disease—when intractable to orthopedic treatment—often rapidly disappears upon the operative removal of the localized pressure upon the cord, and it is nothing short of want of knowledge, should the orthopedic appliances and treatment fail, to allow this condition to persist without the consideration of operative interference.

The crises of tabes—those terrific pains which have so long resisted empirical treatment—are being relegated to the same sphere as trifacial neuralgia. The sensory tracts—the posterior roots—are severed with almost the same permanent and absolute cure which one sees after performing the analogous operation in the facial neuralgia. Gastric crises, then, may be considered to have entered into the circle of practical treatment just as neuralgias have.

Spina bifida, especially in some of its less severe forms, is included, and successfully, in plastic neurological surgery, where perhaps the only visible sign is a growth of hair overlying the bony defect. Where larger tumors exist, the chances of cure depends on the variety of the spina bifida which exists.

Neurorrhaphy, together with a more direct knowledge of nerve growth, has made possible the correct repair of injured and severed nerve trunks, with their return of function, whether sensory or motor, and the disappearance of the paralysis or loss of sensation, as the case may be. Not only this, but nerve anastomosis has become possible, either from one trunk to another, as in hypoglossal or spinal accessory anastomosis with the facial nerve in facial paralysis, or from one part of a trunk to another, as in the nerves which may perchance be caught in scars or injuries damaging a small localized area—the musculospiral nerve in fractures of the upper arm leading to wrist drop and the like.

Nerve tumor — terminal neurofibromata seen frequently in amputation stumps where the proper disposition of the nerve endings has been neglected—and numerous other local nerve conditions, are now subjected to successful surgical treatment, while in pure sciatica, dystrophic ulcers and muscular spasms, nerve stretching plays plays an important part in the restoration to normal of these conditions. The injection of nerve trunks for localized neuralgias has reached a high degree of success, the use of alcohol, osmic acid and chloroform having shown perhaps the best results. Intractable neuralgias, formerly treated with drugs injurious to the system as a whole, are now successfully coped with by this method, though it is unfortunate that there is no guarantee of permanency in the cure beyond perhaps several months and frequently very much less.

Neurectomy, with evulsion of the central root, has, however, proven more satisfactory than the mere injection of the nerves, and considering the simplicity of this operation it is indicated much more frequently than is generally supposed. Supraorbital neuralgias, neuralgias localized along other nerve trunks, the inferior dental, infraorbital and so on may frequently be completely obliterated by this procedure and an almost unbearable pain cured absolutely.

Duchenne-Erb paralysis—the birth palsy of infants—under the exposure and repair of the injured nerve in the brachial plexus—has many

seemingly impossible improvements to its credit, while in anterior poliomyelitis, this frequent cause of flail paralyses, the application of the principles of nerve surgery has gone a long way towards the alleviation of its symptoms and disabilities.

From another standpoint we must realize that symptoms are being treated too much as though they were diseases per se and not enough investigated from the viewpoint of the cause. Too often one does not recognize that this or that symptom is the keynote to the diagnosis of an operable lesion.

Alterations in vision and the visual fields, interlacing of the color fields, alterations in the associated movements of the eyeballs, in the appearance of the optic nerve, the pupillary action, exophthalmos, nystagmus, the condition of the third, fourth and sixth nerve as evidenced by the muscles of the eye, all or any may help immeasurably in reaching a solution to some intricate intracranial problem. Disturbances in taste, in smell, in hearing, facial paralysis, sensory disturbances of the face, similarly have their significance in unraveling like puzzles. Acromegaly and infantilism are now often recognized as merely symptoms of operable tumors of the pituitary, and amenorrhea is frequently a symptom of the same cause. Sexual impotence or loss of power, also a frequent accompaniment of pituitary changes, may likewise be associated with tumors in the cord, while early sexual development and function may strongly suggest pineal gland or adrenal alterations.

The color of the skin, the distribution of the hair—both sound important notes in the diagnostic scale. Incontinence of urine and of feces are both frequently indications of spinal cord lesions; paralysis, whether cerebral, spinal or neural, are nevertheless mere symptoms frequently of trouble higher up in the nervous system which may be rectified. Bleeding from the ear or ecchymoses around the eyes, following injuries to the head, are almost diagnostic of fractured skulls, despite the fact that they are often treated as local contusions.

Paraesthesias, sensory disturbances, tingling and so on play a similar role to the paralyses. Ataxic conditions may, and often do, point to cerebrellar disturbances, and may be the more closely localized, and hence the more easily removed, since Barany's method of localization in the cerebellar lesions has been brought out The scattered, seemingly ill-placed, paralyses of pontine tumors; the headaches, vomiting and high blood pressure, together with the slow pulse and often the disturbances in vision, must be kept in mind as meaning intracranial alterations; color blindness, the aphasias, the inability to orient oneself, to read, to write spontaneously or from dictation, to copy, to talk, the memory lapses—all have their prototypes in well-defined localities or tracts in the brain, whence alterations may be reflected to the outer world as such symptoms.

Neither with the purpose of carrying one through any but the more common neurological conditions which have fairly come into the sphere of surgery, nor with the idea of but hastily scanning a few of the more frequent symptoms, is this paper presented, but with the purpose of suggesting that, in a general way, one who is wrapped up in some special branch, perhaps far removed from neurological affections, will be more on the alert for conditions hitherto unnoticed, and symptoms hitherto uncorrelated with operable conditions, and that the simplicity and successes which have crowned the operative procedures themselves will be recognized with greater facility. We do not wish to convey the idea that all neurological conditions are curable by operative means, but we do mean, rather, to dispel the somewhat antiquated idea that few neurological cases are operable. If a keener insight into the vast possibilities of neurological surgery may be awakened and the successes of this branch under proper conditions of diagnosis and operative technique be realized more fully, this paper will have served its purpose.

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A PLEA AGAINST THE STILL TOO FREQUENT SACRIFICE OF TURBINATES.*

By R W. Bledsoe, M.D.,
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Gentlemen, while this subject is by no means a new one, it is none the less important. Therefore, I advance no apology.

I say very important, because of the still too frequent appeals for relief by patients suffering from the results of a too radical, and in very many instances a useless removal of a large portion, and in some cases total resection of entire inferior turbinate. Why this region is so often and so thoroughly attacked may, I think, be explained in two ways:

First, on account of its *apparent* but by no means real, hypertrophy, bulkiness or swollen condition.

Secondly, on account of its accessibility. While it is becoming less and less frequent, yet too often does a patient's history elicit the fact that some months previously they have had a large bone cut out of the nose, following which there was much temporary improvement, but, since there has developed a very annoying train of symptoms, explained as dryness of the nose and throat, with accumulations of dried secretion, marked susceptibility to cough and irritation of the nose and throat while exposed to smoky or dusty atmosphere or extreme changes in temperature, also, in some a greater or less interference with the normal function within the middle ear.

Frequently, when consulted regarding a nose accused of inadequately or imperfectly performing its function, we find upon inspection a large swollen reddish inferior turbinate on one side. Not uncommonly it is so prominent that it fills the nasal chamber to such an extent that it is the only thing one can see beyond the blades of the speculum. How easy it appears to make a diagnosis of hypertrophy. Therefore, permit me to insist that before we begin to whittle away at the inferior turbinate, we always consider the case carefully from a pathological standpoint, and decide definitely as to whether or not this enormous enlargement is really playing the role of cause or effect.

I wish to say, without hesitation, that in the vast majority of cases it is the effect, and unless true hyperplasia has become sufficiently extensive as to encroach too greatly upon the air space in the nasal chamber, it should be left unharmed.

To ascertain the nature of suspected enlargement, apply a solution of cocaine and adrenalin and allow a few minutes to elapse, giving sufficient time for their constricting actions to become fully manifested.

Then, if upon examination the mucous membrane everywhere appears thin, whitish and plastered closely, as it were, on to the bony framework, and nowhere comes in contact with other tissues, this body *should not* be sacrificed regardless of extent of previous swelling.

However, should anterior tip remain reddish and swollen, indicating a true hyperplasia, this and this only may be removed with scissors, snare, saw or forceps, as may best suit the individual operator. The same procedure may be followed if the middle or belly or erectile portion, or the posterior tip is found to be hypertrophic.

What significance, we may ask, can be attached to an enlarged turbinated body; in other words, why is it enlarged? What is the cause or actual root of evil in any given case? In by far the largest percentage of cases it is the result of insufficient ventilation, due to constricted air space with assicated negative air pressure in nasal chamber on one side, while the opposite chamber is abnormally

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large, and through which most of nasal respiration is carried on.

What is the result? Nature in her wise effort to have the inspired air sufficiently warmed, moistened and filtered, supplies what we may properly term a compensatory hypertrophy of the mucous membrane covering the inferior turbinate; this explanation seems to me to hold good in many cases. However, when the swelling is found to be excessive and nasal respiration markedly impeded, another factor must be prominently considered—that of negative air pressure with resulting stasis.

Now, let us go one step further and ask, why is one chamber abnormally large and containing a much thickened turbinate, while the opposed chamber is constricted, poorly ventilated and turbinates possibly thickened or enlarged in parts?

This class of cases to which I refer is by no means uncommon; rather the contrary, and in which, upon inspection after shrinking of membrane, we find a marked deflection of septum.

The general convexity of this deflection is directed toward the constricted chamber, the concavity serving to increase the area of the larger chamber, or, in addition, there may be a convexity high up projecting into the larger chamber, or there may also be ridges or spurs which project outward sufficiently far to touch or even press upon the outer wall of the narrowed chamber.

Any or all of these previously mentioned conditions may be found in a single case and go to make up the original or exciting cause of the interference with nasal respiratory function for which relief is sought.

Now to the main point at issue; why should a compensatory intumescence, which is in itself innocent in nature, or even a moderately hypertrophic inferior turbinate, be interfered with when it will be readily taken care of by nature, provided the real cause, be it an unusually thickened or deflected septum, or spurs or ridges on same, be properly corrected by surgical procedures as indicated in each individual case.

Previous to the inauguration of the submucous resection which revolutionized nasal surgery there was possibly some legitimate excuse for letting septal abnormalities severely alone, both on account of the technique employed and results therefrom.

Spurs and ridges were removed with their overlying mucosa, leaving a broad projecting base, which, when healed, was covered by scar tissue devoid of ciliated epithelium. These not only formed suitable places for the collection of crusts and scabs, but deprived the nasal chamber of just that much functionating mucous membrane.

This latter, however, may be unimportant, as we are learning how well nature has prepared for, or rather anticipated loss of a certain amount of tissue without detriment to the functionating power of the organ involved.

Nevertheless, I am sure you gentlemen will agree with me that we have found from experience that conservation of nasal mucosa, wherever possible, is a wise thing to keep in mind. Moreover, the resulting increase in air space was mighty small in comparison to the results obtainable today. Since the advent of the sub-mucous operation, there has been a rapid and marked diminution in the frequency and extent of operations upon the *inferior turbinate*, because we found that all deflections, spurs and ridges could be neatly corrected and septum replaced in its normal position in the median line, all with practically no loss of mucous membrane.

The enlarged inferior turbinate being disturbed only in so far as it is hypertrophic, because nature will in a few weeks take better care of it than we with our saws or scissors—provided the *inspiratory* area or vault of the nose is patulous, and no interference to the passage of air in this region exists. As yet I have not referred to the middle turbinate—I think I can safely say without fear of con-

tradiction, that not infrequently the overworked, turgescent inferior turbinate is operated, when the actual fault lies within the middle turbinate, which is cystic, hypertrophic as a result of pressure from septal deviation or thickening, or to diseased ethmoidal cells, such a condition serving only to block off or encroach greatly upon the normal *inspiratory* tract.

These are frequently found in persons who have had their turbinates cauterized time and again, and finally removed, leaving space almost large enough to put finger through back into the naso-pharynx, and still these patients complain of inspiratory difficulty. Had only the hyperplastic area of these inferior turbinates been removed, and the vault of the nose —the middle turbinate and its adnexa, received appropriate treatment, relief would have been satisfactory. I feel sure that nasal surgery has many times gotten a black eye justly. If we first settle in our own minds the true underlying pathology, and operate accordingly, I am certain our patients will be more appreciative six months or a year later than has often been the case in the past.

Gentlemen, in writing upon this subject it was not my intention to suggest anything new, and I dare say my expectations have been fulfilled. I merely wish to recall to your attention that which you already know, but *some* occasionally lose sight of. I hope the discussion will bring out the fact, whether or not it is still *your* misfortune to see some of these cases with over-operated inferior turbinates. Therefore, if my paper will be the means of encouraging even a few to be a little more conservative and to look well into the pathology before operating, I shall feel grateful indeed.

DISCUSSION.

Horace T. Aynsworth, Waco, Tex.—The paper represents my ideas exactly. A remark was made by one gentleman in a discussion previous to this, in which the inferior turbinatee was removed in toto. I think that was what the doctor was fighting in his paper. A great many of our cases will improve if we attend to the secretory disturbances by purgatives. You will find very often that the appropriate sinus operation has to be made before the trouble will go down. The doctor's suggestion to remove only the hyperplasia, and the other suggestion he made of the appropriate treatment of the middle turbinate I follow very largely in my practice, not hesitating to sacrifice the middle turbinate if it appears cystic or diseased. The test that I think should be employed is on applying cocaine, and if the swelling will go down the inferior turbinate should not be sacrificed. That is a test that should be applied in every case, and in no case should we sacrifice our inferior turbinate first. It is a most important functioning organ in the nose. You can sacrifice the middle turbinate and the ethmoidal region. You will find the inferior turbinate has often taken care of itself in a few weeks afterwards. That is a point I wish to very strongly emphasize. You do not have to be in a hurry if operating on a sensible patient in private practice. My experience is largely in private practice, and these are the points I offer. Very often I notice a turgescence for several weeks after the operation I have spoken of.

I wish in closing merely to mention an instrument for crushing the lower border of the inferior turbinate recently devised by Pollok. It is like a down-cutting forceps. He crushes the lower border and claims to get excellent results.

J. Ivimey Dowling, Albany, N. Y.—I have been impressed by the way in which operative procedures or methods of treatment have passed over the country in a sort of wave, be popular for a time and then forgotten. I am reminded of an operation devised by Holmes, of Cincinnati, about twelve years ago. It is a particularly good operation in selected cases, and consists of removing merely the lower edge of the scroll of the inferior turbinate by passing a thin straight saw under the edge of the scroll of the turbinate, and cutting toward the septum. This removes the slightest piece of bone, just a sliver, merely the lower edge of the turbinate. When properly done the functioning powers of the turbinate are in no ways interfered with.

This method of Holmes' is one which should be borne in mind and should have a wider knowledge than it apparently has. Through the use of this method drainage is improved and proper respiratory provision is provided.

We should not be controlled by our fancies, but rather by scientific principles, and in selecting the method of operative treatment we should always be governed by the needs of each individual case and be ruled by the axiom. **Improve drainage and provide a proper respiratory path.**

Dudley S. Reynolds, Louisville, Ky.—I want to say something about the pathology of these nasal obstructions. The term hypertrophy of turbinate bone is an absurd term. I never saw hypertrophy of a bone in my life; I do not believe it exists. The dry inflammatory condition of the lining of the nose, attended by fetid breath, is a condition which exists independently of the relations of the turbinate bones to the septum. A person having that quite dreadful disease of the lining of his nose and pharynx will not be relieved by any

kind of operation on the bones in the nose. Swelling of the soft parts covering the turbinate bones constitutes in no sense of the word a hypertrophy of the bone. Let us do away with such expressions as hypertrophied conditions of the bones.

A Member—No bone?

Dr. Reynolds—I am using the words of the essayist. To lay down a rule of interference or non-interference is quite absurd. They are just as different as the people are in other features. You will hardly find two persons with exact expressions of countenance. There are conditions in which the inferior turbinate bone is an obstructing agent by virtue of its natural development, by virtue of its relations to the septum, and to the middle turbinate. Because a man has a nasal obstruction is no reason for jumping to the conclusion his inferior turbinates should come out.

I am not able to correct deviating nasal septa to my satisfaction. If the essayist has a satisfactory way of doing so, I want to learn it. As to the function of the inferior turbinate bone, as described in text-books, and in the discussions of papers in societies, it is based entirely on the imagination, just like those dreadful effects described as resulting from removing the inferior turbine. I suppose I have removed about as many inferior turbinates as most of the gentlemen present.

I introduced that operation in a paper at Denver, in August, 1904. I received a very severe castigation in the form of adverse discussion, and some of the gentlemen, who indulged most violently in denouncing the operation, are now performing it themselves; and, the gentleman who was the most violent opponent of it, came to me afterward, and I did the operation personally upon him, removing both inferior turbinates at one sitting.

Now, where the inferior turbinate bone is so broad, and where it comes over high and presses over against the septum, where considerable pressure exists between that bone and the septum (usually, of course, in a widely deviating septum there are ridges), then cutting out the inferior turbinate bone relieves that obstruction. You make an examination through the pharynx first with the rhinoscopic mirror, viewing the chambers in sections only. It is easy to pass the finger in behind the uvula. There is no instrument that will convey half the information that your finger will, in the vault of the pharynx, and posterior nasal chambers. You may look back with the instrument and see a small area, but when you put your finger back and feel a projection so large and broad you can't put the tip of your finger forward into the posterior nares, what are you going to do? Is it not more in accordance with scientific principles to pass a narrow saw, with sharp teeth beneath the inferior turbinate and remove it? The tissues will be cut clean, and your line of wound is small and narrow. To go gouging in with forceps and try to crush it out, or with snare or scissors, is, I think, an unscientific and often a rough procedure. It is not always the saw is the best thing to use; you sometimes expedite matters by the use of the chisel. The turbinate bone is not always very thin; it is sometimes a quarter of an inch in thickness in the posterior extremity, and usually half that thick in its anterior attachment.

There are cases in which the inferior turbinate bone should come out, but let us not fix any rule; let us know the present state of the cavity of the nose before we decide to operate. I have had a pretty considerable experience in the operation; I claim to be in a position to speak with some authority. I have seen so much bad surgery and inefficient results from removing a part of it only that I feel like saying turbinotomy is seldom indicated.

Now, just a brief recital of a case in point. A gentleman who had been examined by one of my confreres, and had been informed nothing could be done for him; that he had tuberculosis, and the only way to prolong his life was to have him go to the Rocky Mountains. This gentleman returned to his home and in a few days came back to Louisville to see me. Mr. Newton Coger is his name. He came accompanied by his friend, Mr. George Bohon, who was going to see him off to Denver. They came into my office and told me none of his history. After a careful examination I told Mr. Coger it would be necessary to remove some bones from his nose. "Can you open it, so I can breathe through it?" "Yes." I proceeded to saw out the inferior turbinate bone on the left side. It was understood Mr. Coger would go to St. Joseph's Infirmary to remain until the next day. The next morning he stepped into my office. "Doctor, I felt myself able to breathe through my nose so freely after leaving your office I decided to go home." He is a strong, hearty, healthy man, breathing through his nose all the time since that day, and has had no trouble. He has had no dryness. He has sent me a great many people with nasal obstruction, asking to have the same kind of operation.

None of my patients have ever suffered any dryness or discomfort due to turbinectomy, and I do not believe it possible for that operation to produce any such conditions as those described in the essay.

Wm. B. McClure, Lexington, Ky.—My experience coincides with Dr. Reynolds'. I have had a reasonable number of operations of this character. For years I have watched carefully for this so-called dryness; I can't recall a single instance that this condition existed to the extent that it added to the discomfort of the patient. This morning I had a case from an adjoining county. He said: "My neighbor over there you operated on several years ago had such delightful results that he insisted on my coming." That is almost an everyday experience in my practice. People come in and request an operation. It means a complete removal of the inferior turbinate in many instances. I never found that dryness referred to by the essayist.

L. A. Bize, Tampa, Fla.—I have not been in the special work as long as Dr. Reynolds. I have been doing special work fifteen years. If there is one thing I have been a crank on it is the conservation of the mucous membrane in the nose. I believe many of the cases can be relieved by teaching our patients how to live. That, I think, is one of the most important duties of the physician. I know

of no department where it is more important than in the conditions of the nose and throat.

I think when the turbinates are enlarged to such an extent as to be an impediment, that the amount necessary should be removed. I cannot reconcile myself to the indiscriminate complete removal of the turbinates, particularly the inferior turbinate, and the destruction of the mucous membrane thereby. There is no question but observation has taught me a proper sub-mucous done as a rule will result in a great many of the turbinates regaining their former condition. I believe the time will come when we will attempt to do all our nasal operations sub-mucously. When we stop to think for a moment of the remarkable function of the mucous membrane in preparing the air inhaled when we pass from a steam-heated room to an atmosphere 30 degrees below zero, when we are taking from the individual a part of the apparatus with which to adjust himself to nature, we should view it seriously. When we get patients with nasal condition, even mild, and get catarrhal conditions of the ears we must consider seriously the proper care of the mucous membrane of the nose. Of course, that applies to all sinus work. As I remarked before, a great many of these conditions can be relieved by proper hygiene. I believe in removing only that which is absolutely necessary; if the condition will justify a sub-mucous, do it.

N. C. Steele, Chattanooga, Tenn.—I thought of joining the essayist in his protest against removing the lower turbinates, but after listening to the last speaker I will change my protest to the "indiscriminate" removal of those bodies. It seems the custom of some rhinologists to remove the turbinates from almost every patient they have with nasal disease. Dr. Reynolds seems to think when patients complain of dryness of the throat after their turbinates have been removed, that it is largely imaginary. Well, in that case it is the patient's imagination, and not that of the doctor whom he consults.

Dr. Reynolds—What I said was that the dryness was not the result of the operation, and that such a supposition is imaginary.

Dr. Steele—I concede that was the doctor's meaning. I have had several persons consult me after having their turbinates removed who complained of dryness and unnatural coolness in the throat on inspiration, and also of difficulty of breathing. Possibly it was partly their imagination, but nevertheless it was distressing to the patient. "Done too often" is my verdict about this operation. In my practice I am very conservative in operating on the lower turbinate. It is the most important body in the nose, and I do not remove more than is absolutely necessary to obtain free respiration. In many cases it is difficult to know just exactly what to do. I use either the electric cautery, the scissors or the acids (nitric or trichlor-acetic) as seems indicated and usually remove the lower border of the turbinate. In each case I try to adapt the treatment to the special condition of the nose.

There is no general single rule to guide us in treating by medicines or operations all cases of nasal respiratory inefficiency.

R. W. Bledsoe, Covington, Ky.—I want to thank you very kindly for the consideration with which you have handled my paper. I am delighted to see that so many are heartily in accord with my suggestions. I do not think there is any doubt about it being the trend of nasal surgery to-day to conserve nasal mucous membrane wherever possible.

In regard to Dr. Nelson's remarks about the enlarged inferior turbinate with a normal septum. That may be, and often it is the case, that we find enlarged inferior turbinates with a normal septum. Every nose that is stopped up is not due to septal deviation. As one gentleman says, these waves pass over the country and are fads. Truly the sub-mucous operation has gone the way of the rest. No doubt often it will be done unnecsarily. Like every operation, the pendulum swings too far and then comes back to the normal condition. But more good results or cures will follow it when properly done than by any of the preceding fads.

Many of the abnormal turbinates are due to the general catarrhal state or toxemia, and those states or conditions do increase the swelling of the mucous membranes of the nose. Not only of the inferior turbinate but the middle turbinate, and not only one side, but both sides of the nose. Usually this class of cases can be cured without surgery. Look after the general condition, sto the toxaemia—encourage elimination, proper exercise and plenty of fresh air, and prohibit smoking.

There are other cases of just that nature (enlarged turbinates with a normal septum) in which particularly in the younger element, children and young adults, you find a large mass of adenoids. No man should operate on the nose without first satisfying himself as to the condition of the nasopharynx. I should feel very much chagrined to operate on the inferior turbinate and later find adenoids. Do not operate solely because the turbinate is enlarged. Every one of you have examined children having adenoids and found the nasal passages filled with mucus and turbinates swollen Those cases get well, make a permanent recovery, after the tonsils and adenoids have been removed. They breathe through the nose properly and the circulation takes care of the intumescent rhinitis. Undoubtedly there are times when the inferior turbinates must be operated on. I do it when necessary, but the necessity for doing it is becoming less and less all the time. Dr. Holmes' inferior turbinate operation is very satisfactory and to be commended in many cases.

I am very glad to see that we are almost unanimous in the belief that the conservation of mucosa is essential. The protest against the indiscriminate removal of the turbinate I still maintain is timely. As my paper brought out. the case should be gone into carefully from a pathological standpoint. First find out your actual cause and then operate accordingly. For instance, in a case where the middle turbinate is swollen, or deflection of septum encroaches on the middle turbinate region, limiting your respiratory tract to absolutely nothing, what good are you going to do the patient by operating on the inferior turbinate. You are going to induce a condition of dryness. In regard to Dr. Reynolds, his sincerity certainly deserves considerable respect. I am going to say a

few words in a kindly manner. I must insist on disagreeing with him in regard to the total removal of inferior turbinates. It affords some temporary improvement, to be sure. The patient can breathe a little better, but they can be better operated by removing the real cause of the obstruction, be it deflected septum, spurs, hypertrophied or cystic middle or inferior turbinates. I do not believe in ever removing the inferior turbinate in toto, not only because it is unnecessary but irrational—you increase the expiratory tract and do not help the inspiratory tract one particle. If you operate on the middle turbinate region and let the lower alone you will have done the patient a greater service. I may have misunderstood Dr. Reynolds. Did you say patients came complaining of the dry conditions and crusts? I have never seen that condition in the disease or class of cases covered by my paper.

Dr. Reynolds—Don't you see proliferous rhinitis?

Dr. Bledsoe—I have never seen that condition nor heard it complained of in cases of hyperplastic nor hypertrophic rhinitis. Do you refer to ozena or atrophic rhinitis?

Dr. Reynolds—I did not use that word.

Dr. Bledsoe—When you remove the turbinate in dry catarrh or ozena I again disagree with you I am sure that in a true case of atrophic rhinitis nature will take care of the case too quickly and make a neater job than will the saw. But in just this class of cases do we particularly desire to save every bit of mucosa possible.

BRONCHO-ESOPHAGOSCOPY.*

By E. W. Carpenter,
Greenville, S. C.

In the summer of 1912 I reported five cases of foreign bodies removed from the bronchi with one death, due to the parents' delay in obtaining aid for an infant whose trachea presented sufficient inflammatory narrowing to prevent the introduction of the scope either by a high or low operation. I presented at the same time one successful case of esophagoscopy.

Since then my share of similar work has amounted to eight cases. Before reporting them let me say a few words: The majority of foreign bodies in the lungs cannot be expelled by efforts of the patients, and most often will cause death sooner or later, therefore never procrastinate and wait for them to be coughed up. Do not accept all that children say about the nature of the foreign body, because fear or other reasons often prompt them to obscure the truth of the situation.

Cough of a paroxysmal and spasmodic nature is *always* present in recent cases where foreign bodies have been introduced into the lungs.

A chronic cough in which all means to account for its presence has resulted in failure, should be submitted to bronchoscopy.

Be very insistent in obtaining the very smallest detail connected wtih the initial symptoms and after exhausting all your resourcefulness, submit your patient to the X-ray, a good negative will sometimes show results different from those suggested by the case history.

Case I—Infant, 14 months, while playing at an open bureau drawer had severe choking spell. Was brought to my office within an hour, transferred to the hospital, and within three hours after the accident investigation was begun. Scope introduced without difficulty, and a hard, smooth, round blue substance exposed in the right bronchus firmly wedged and immobile.

Diagnosis of a small marble was made, and atfer working for an hour my colleague, Dr. J. W. Jervey, being in the building, was invited into the case. We worked alternately for three hours, when he succeeded in a very deft and skillful manner in withdrawing a large bead. Recovery after right lobar pneumonia. Dr. Alva Pack attending physician.

Case II—Infant, two years old, while playing with a mouth full of grains of corn, laughed and was seized with violent choking. I saw the case after two weeks. Pneumonia present, infant desperately ill. Scope passed through the subglottic arear with difficulty, because of the subglottic infiltration, when respiration was immediately suspended, necessitating the withdrawal of the tube, after which it was impossible to reintroduce it. It could be passed between the cords and below them one-third inch, but the subglottic mucosa presented a firm ring which prevented further progress.

The trachea was opened, scope introduced and a grain of corn discovered completely filling the

*Read by title in the Section on Ophthalmology, Rhinology, Otology and Laryngology of the Southern Medical Association, seventh annual meeting, Lexington, Ky., November 17-20, 1913.

right bronchus like a cork. It was extracted at first attempt, when a flood of pus deluged the lungs.

Because of the subglottic hyperplasia it occurred to me to intubate the larynx and close the tracheal opening, believing this would give good ventilation, reduce the chances of sepsis and overcome the subglottic hyperplasia early, instead of running the risk of having to treat a tracheal stenosis later.

While introducing an O'Dwyer tube, successful at first attempt but tight-fitting, respiration suddenly stopped, and all attempts to reestablish it failed. Case referred by Dr. H. L. Shaw.

Case III—Infant brought to my office in a stupid, relaxed cyanotic state with very shallow breathing, with history of choking spell one hour before while eating some cornbread. There being no time to transfer it to the hospital, I introduced the scope in prone position at once. Trachea and main bronchi were filled with thick mucus and numerous particles of cornbread. After careful mopping they were cleaned out and respiration became regular and deep. On removal of tube the baby sat up and cried and seemed perfectly comfortable. Case referred by Prof. M. D. Earle.

Case IV—Child five and one-half years. This was a second-handed case. Eight days after inhaling a coffee bean, another physician exposed the bean, but for some reason failed to remove it, and abandoned the attempt. The child was brought to me two days after this attempt with the statement that the first operation was abandoned because it was necessary to do a low operation, and the mother at that time withheld her consent to open the trachea, and that the parents had now consented to any measure deemed advisable and the physician who had conducted the first investigation was out of the city. Pulse 130, respiration 32, temperature 102.5. Respiration noisy, grey cyanosis, tracheal tug, abdominal recession and inspiratory stridor, child in a critical condition. Scope introduced into trachea and liberated a flood of pus and blood. Under constant mopping, both main bronchi were explored, also the right inferior lobe bronchus. At the end of the right main bronchus an area of bleeding and intumesence was encountered and passed with difficulty, no foreign body appearing and the patient being in extremis the search was discontinued after an hour's work. The child was put to bed and in a short time was breathing easily, deep, and with much less noise than before the operation.

The subsequent behavior of this case suggests that this patient was being drowned by his own excretions, for after emptying the trachea and bronchi of the retained pus and blood, respiration was easier, deeper and less labored than before. He passed through a broncho pneumonia and a week later was in good condition. My failure to find the bean was due to the fact that it was probably in a swollen small bronchus or had ulcerated through the bronchial wall, and I was unable to locate the perforation. Case referred by Dr. C. G. Todd.

Case V—Mrs. W. H. Hammett, 42 years. History: Nine years ago while eating hurriedly, became choked on a bolus of beeksteak; since then hurried eating of poorly masticated food frequently precipitated choking spells, which have lasted fifteen to twenty minutes, during which time nothing could be swallowed. Scope showed oval ulcer about 2 c. m. in longest diameter just below the lower border of cricoid cartilage on anterior esophageal wall, edges thick, center dark, red and bleeding easily. At this point the lumen of the esopahgus was reduced considerably. A tube 11 m. m. diameter passing with difficulty. She was given hyd. chl. cor. grs. 1-16 t. i. d. in a glass of water to be taken in sips, and applications of nitrate silver grs. 100, one ounce water applied to the ulcer every third day. Near the end of the healing process bougies were used to dilate the stricture. During the treatment, which occupied two months, the patient gained twenty pounds in weight and now eats meat freely, a thing she had not done in nine years.

Case VI—Hughes, 5½ years old, severe diphtheria at eighteen months of age, no serum administered, convalescence protracted. Since this illness has never been able to swallow any solid food, and semi-solids are swallowed with difficulty; has lived mainly on soups and milk. This was a very obstreperous and unruly child and a general anaesthetic was necessary. The scope entered the esophagus and passed easily to a point just above the sternal notch, where a perfectly normal mucous membrane stretched like a diaphragm across the lumen with a central opening about 1½ millimeters in diameter. With a dilating instrument this was stretched under direct guidance of vision to about 5 m. m. in diameter. This was probably a congenital membrane. Assisted by Dr. W. B. Sparkman.

Case VII—Hughes, 5 years old. For two weeks attacks of spasmodic coughing, leading to cyanosis and syncope. After careful questioning it was brought out that two weeks previously he was found in a stupid condition on the piazza

steps by a little sister. Her cries brought the mother, who thought he was just recovering from a fainting spell. On further questioning the child admitted that he had swalowed a piece of stick he had been holding in his mouth. When first seen by me his temperature was 101, pulse 130, breathing was quiet, and the only clinical conditions discovered by examination of chest was a general moderate moisture, with reduced vesicular murmur over right middle lobe.

The child was so insistent that a piece of stick had "choked" him that I proceeded to use the scope without an X-ray negative. This proved to be an error, because the offending body was a large lead bullet 32½ m. m. by 30 m. m. in circumference, which was located at the bottom of the left main bronchus after time lost in exploring the whole right tree. It was very difficult to grasp the bullet firmly enough to dislodge it. It disengaged itself several times and was brought through the cords by exerting considerable force. Recovery without complications. Referred by Dr. C. O. Bates.

Case VIII—Baby 2 years old was brought to my office within two hours after swallowing a safety pin. It had no cough, but refused to swallow anything and was dribbling freely. My first procedure was to introduce my finger into the pharynx, then passed it over the laryngeal introitus and into esophagus as far as possible, when I encountered a hard substance. Placing the baby in a winding sheet in the Johnston position I passed a Jackson laryngoscope over the cricoid cartilage into the esophagus and on firm retraction of larynx exposed the shielded end of an open safety pin, point to right. It could not be withdrawn, as the point engaged the soft tissues, but after pushing it down a short distance I turned the point to the vertebra and then extracted it by direct force, the pin being a small one. The pointed end yielded with but little force. It measured 1 inch long and ¼-inch wide at the hooded end. Recovery without complications. Referred by Dr. Alva Pack.

Remarks.—I believe that case two died from a too forceful dilation of the sub-glottic area with a full-sized intubation tube for the age. Respiration ceased on the first introduction of the broncho-scope in the swollen trachea in the early stages of the operation, and had to be withdrawn immediately. In the future I shall be careful not to use force in entering the trachea.

Killian has recently insisted that we have been using tubes of dangerously large diameter, and recommends a much smaller set for children than formerly used.

Anaesthesia.—To inspect the larynx none is ever necessary, no matter what the age of the patient. Morphine and atropine are of great assistance in exploring the bronchial tree. Never give enough morphine to overcome the cough reflex, as it is the "watch dog" of the lungs. The upper end of the esophagus can always be exposed with a speculum even in obstreperous children by using a winding sheet, placing them flat on their backs and introducing the speculum between the cuspid and bicuspid teeth with the patient's head turned about 60 degrees away from the operator. With the cooperation of an adult patient the whole trachea and esophagus can be inspected after application of 4 per cent cocaine to the pharynx and larynx. I am convinced that no attempt should be made to pass a scope into the trachea of a vigorously resisting child. I have found atropine of much assistance in these cases, as it lessens the bronchial secretions, and expedites investigations by preventing an immediate post-operative outpouring of secretions in the trachea and bronchi. This complication has, I believe, caused the death of a few patients. Jackson has an excellent editorial on this subject, viz: "Drowning of Patient in His Own Secretions," in the December, 1911, Laryngoscope.

Case 3 in this paper was moribund when it reached my office, not because of the grains of cornbread in respiratory apparatus, but because of the abundance of mucous therein which it was unable to cough up and which was drowning it.

Case 4 is also an example of this kind. There was only a small area of consolidated lung tissue, yet cyanosis was present, because the respiratory tree was filled with pus, mucus and blood thereby interfering with oxygenation. This patient would undoubtedly have died had not the abundance of fluid been removed.

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Next Meeting, Richmond, Va., Nov. 9, 10, 11, 12, 1914

EDITORIAL DEPARTMENT

GENUINE TYPHOID IMMUNIZATION.

The *Army and Navy Journal* is authority for the statement that during the calendar year 1913 there occurred but three cases of typhoid fever in the United States Army. Two of these had not taken the prophylactic treatment and the third, which occurred in China, whose treatment was investigated, was considered doubtful.

The reports came from every place where United States troops are found, including China, the Philippines, Alaska and the Mexican border. If there is any other treatment or measure used in the science and practice of medicine that can boast of 100 per cent of successes it is worth mentioning. The unvarying success removes the last argument against making the treatment compulsory in the army and navy and suggests compulsory vaccination in cities in times of typhoid fever epidemics. To encourage its more general use in Virginia, the State Board of Health has arranged to distribute complete apparatus and material for its administration at a cost of only 60 cents. It consists of three doses, each in its own syringe ready for use. The Board cautions the public that the treatment should be administered only by a physician. It is not painful, does not interefere with the daily routine of work and is an infallible safeguard against the disease.

THE EUGENICS LAW OF WISCONSIN.

In Wisconsin the law requires male applicants for licenses to marry to submit to a rigid physical examination, which includes a blood test. Necessarily the microscope must also be used. The law went into effect January 1, 1913, and in December, 1912, there were 500 more marriages than in December, 1911. The following month the marriages were 209 fewer than in the same month the

year before the law took effect. This is a very small variation for the population of a State, but the explanation may be that there are ways of getting married in Wisconsin without any license. If, as is said, the legal fee for "a rigid examination, including a blood test," is $3, it would seem that very few capable and conscientious physicians would want the job, especially in view of the tremendous responsibility it entails. It must be no light matter to refuse a prominent young citizen the certificate that he *must have* to secure a marriage license, because of a positive Wassermann. Also men may seek until they find doctors who can be *persuaded,* for unfortunately there are such in every large town or city. Probably in the end the "rigid physical examination" will be made by the responsive eyes most interested and the "blood test" will be made heart to heart in the good old way.

DANGER IN GERMICIDES.

Physicians and surgeons, even trained nurses, will do a good deed if they warn their lay friends against the indiscriminate use of antiseptics and germicides. Mischief may result in more ways than one from their improper use.

A child receives a cut or an abrasion. At once the fond mother deluges it with peroxide of hydrogen or a weak solution of carbolic acid or of a "bichloride" tablet, to "kill the germs." That is all right; but when the wound is kept under the influence of the disinfectant hour after hour or for successive days, it is all wrong. The first application discouraged such germs as were present. It also discouraged the normal cells needed for repair. If the wound were then protected from new infection, by covering it with sterile lint or absorbent cotton, new cells would come to repair the lesion and it would promptly heal. But if the protecting lint is repeatedly wetted with the antiseptic, each successive reinforcement of repair cells will be paralyzed, and then the mother will wonder why her child's flesh was "so slow to heal." If the antiseptic contains carbolic acid its constant application may cause the death of the cells constantly subjected to it, resulting in a sloughing ulcer. If bichloride of mercury is the active agent, it may be absorbed and cause systemic poisoning. Better teach people that the old-fashioned way in vogue before so much pseudoscience was born is even now the best.

Wash the injured spot gently with pure, warm water, put a little turpentine on the wound, tie it up in a rag and let it sacredly alone until it gets well.

Of course, such advice is not suitable for punctured wounds liable to tetanus infection, or to the mangling from fireworks. Those are surgeon's jobs, and none other; and though an injection with a pointless hypodermic needle of the entire depth of the puncture with turpentine may possibly save from tetanus, only the open treatment is sure. But the heartbreaking feature of the whole miserable business of domestic medicine is the frequent poisoning by the ever-present bichloride tablet found in so many intelligent households. More deadly far than the morphine and laudanum and cocaine that are so carefully withheld from common use, they are constantly claiming new victims and bereaving more families. And there is not the slightest necessity for it. Vaginal douches of one tablespoonful of the official "alkaline antiseptic solution" with a pint of warm water are more conducive to cleanliness and comfort and equally inexpensiv, *and perfectly safe.*

How long will our profession strew the paths of its patrons with such unnecessary perils? It is time to stop, right now!

OUR HEAVY TAX FROM MALARIA.

The United States Public Health Service quotes some interesting figures concerning the cost of malaria to the South, and though this subject has previously been considered, it is

too pressing to be dismissed with a few words.

One-sixth of the physicians in the South, replying to a circular of inquiry, report nearly 100,000 cases of malaria occurring in 1913. The inference is that in reality there were somewhere near to half a million cases.

The average loss of time to working people from malaria during the busiest season is reckoned at two weeks per person. Estimating the sufferers at 500,000 and counting the wages at $10 for two weeks, we have a tax of five million dollars imposed by malaria alone.

Of course, such an estimate is eminently unreliable, but it points at a possibility worth thinking about. Drainage of swamps and cultivating the wet lands would banish the mosquito from the South as it has in the Middle West, and with it would go malaria. Also it would add immensely to the area of rich farming lands. Speed the day!

BE CAREFUL OF PHENOLPHTHALEIN.

In the *Journal of Biological Chemistry* there recently appeared an article by J. L. Hydrick, entitled "Albuminuria Following the Ingestion of Phenolphthalein," which calls for more than a passing notice.

In a control where twenty delicate tests, used before giving the phenolphthalein, failed to reveal the presence of albumen, after the ingestion of 1 to 2 grains, a twenty-four-hour specimen of the urine showed albumen in every test. The amount varied from a mere trace up to a quarter of one per cent.

"One swallow does not make a summer," neither does the sensitiveness to phenolphthalein of one man's kidneys prove that such a condition generally prevails. The drug is too useful and convenient to be cast aside and condemned on the first accusation. Fortunately it is a question easily determined by any one of us.

Test for albumen the urine of the next few cases to which you give it, doctor. Let's settle this question ourselves, and not wait for New York, Philadelphia or Berlin to tell us what we must believe about it.

AN ADANCE IN MEDICAL EDUCATION.

Every advance in medical education in the South is of interest to the profession.

Therefore, it gives the JOURNAL great pleasure to chronicle the fact that at Mobile the School of Medicine of the University of Alabama has made the chair of the Practice of Medicine an all-time professorship, with all the clinical facilities of the City Dispensary, City Hospital and Mt. Vernon Hospital at its command. The incumbent will receive as liberal a salary as the resources of the institution will allow and will devote his whole time to the work. Dr. J. Howard Agnew, formerly of the University of Michigan, has assumed the duties of the new position.

Thus one more forward step along the ceaseless march of improvement has been taken by another Southern medical school. It is a step that must soon be taken by every medical college that maintains a Class A standard.

USEFUL HINTS.

Doctor, you may some time need protection against a blackmailing suit—and may wish to know the best way to protect yourself. Or you may have some patients who you are thinking of sending to a sanatorium. Or you may need a washable office coat made especially for yourself. Or you may wish to try the newest hypnotic or antiseptic in your work. Or perhaps you are thinking of buying some new books. All these things, and more, are represented in our advertising pages. Don't wait for an emergency, but get posted beforehand, and then order or not as you deem best. Much valuable knowledge may

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So suppose you look at the advertisements we carry and if you see anything that interests you drop the advertiser a card of inquiry. And if you say you saw the ad in the SOUTHERN MEDICAL JOURNAL you will be helping a faithful friend, and it will cost you nothing.

THERAPEUTICS

GLYCERIN—(Continued.)

Glycerin is obtained by decomposing fats under pressure of steam. It is a normal constituent of all fats, though, chemically speaking, it is an alcohol. It is a clear, amber-colored, syrupy liquid, odorless and with a sweet, warm taste. It is soluble in water or alcohol, but in almost no other substance, but it is a ready solvent of many other substances, both organic and inorganic. It is very hygroscopic, readily absorbing moisture from the atmosphere until it becomes an impurity.

Heated with an equal weight of gelatin, it forms a compound which is solid when cool, but slowly liquefies at body temperature. This glycero-gelatin is used to make medicated urethral bougies and sometimes rectal suppositories.

Glycerin, when mixed with nitric acid, becomes the dreaded explosive, nitro-glycerin. If a strong solution of permanganate of potash or of chromic acid be poured into glycerin, the result is a violent explosion.

Recently it has been announced that the hydrochlorate of quinin dissolved in glycerin is so quickly absorbed by inunction of the skin that its therapeutic effect is produced more quickly than by hpyodermic injection as a solution in water. The proportion is quin. hydrochl 3 II; pure warm glycerin ℥ II. Each teaspoonful contains 8 grains.

The glycerites of starch, of carbolic acid, of tannin, of hydrastis, and boroglyceride are convenient combinations for application of the several agents mentioned.

Glycerin has been given internally as a preventive of intestinal fermentation and as a substitute for sugar in diabetic diets. It is promptly absorbed by the digestive mucosa and but little of it can be traced or recovered, leading to the conclusion that it is oxidized in the system and to a certain extent acts as a food. Although it forms a very considerable part of fats and oils, it seems not to take their place as a food. For one purpose there can be no doubt of its usefulness taken internally, and that is as a partial remedy for the invasion by trichina spiralis. If the diagnosis is promptly made as soon as the migration causes the rheumatoid pains and concurrent symptoms, there is still time to destroy millions of the worms which have not completed their metamorphosis. Half an ounce, followed in thirty minutes by the same dose (15.00 c.c.) of castor oil, and a repetition of the process every four hours for three doses will probably accomplish all it has the power to do in the way of relief.

It has also been given as a taeniacide, but the practice is not usual.

When given internally, it should be diluted with at least an equal quantity of syrup or emulsion to protect the tissues.

LINUM.

Linum, or flaxseed, is one of the most soothing emollient applications at our command. It is used in the form of a poultice made of the crushed seed or meal. This is stirred into a very thin batter with tepid water and then allowed to simmer slowly for half an hour. The result is a semi-gelatinous, bland mass, which, when cooled to the proper temperature and spread upon cloth, makes an ideal poultice.

Sometimes a little laudanum is dropped upon the surface of it before applying to a painful swelling. It should never be allowed to become cold upon the skin, but must be changed soon after it cools below the normal body temperature. Tannin, mustard, glycerin, laudanum and belladonna are substances sometimes incorporated into the mass.

Flaxseed tea, made by slowly steeping or infusing half an ounce (15.00 gm.) of the whole seed in a quart of water for two hours, and straining through cheesecloth, is a demulcent drink whose soothing properties in cases of irritable bladder have been often demonstrated, though its mode of action is not understood. Four ounces (120.00 c.c.), or a small teacupful every two or three hours is the usual dose. It may be sweetened and flavored as desired.

A flaxseed dropped into the eye at the outer

canthus and allowed to remain will surround itself with a bland mucilage which will entangle grains of grit or sand and remove them at the opposite corner.

Carron oil, an application which has long been a favorite dressing for severe and extensive burns, is made by mixing equal parts of linseed oil and limewater. Its unpleasant odor and filthy appearance have caused it to be used less frequently than formerly, especially since more efficient applications are found.

ULMUS.

The bark of the slippery elm tree affords an abundant, glairy, almost tasteless mucilage, simply by soaking in cold water. The ground bark is used for poultices. The mucilage is a grateful application to the parched tongues of fever patients. For this purpose a few sticks of the bark standing by the bedside in a glass of cold water will afford all that is necessary. The bark is sometimes made into tents for the dilatation of the cervix uteri. By many they are preferred to any others.

ACIDUM PICRICUM.

Picric acid is used in medicine for two purposes. One is as a delicate chemical test for albumen in the urine, the other as probably the most efficient dressing for extensive burns at our command. Some authors warn us against using it over a too extended surface lest absorption and poisoning result. On the other hand those who are most familiar with its use, surgeons and physicians in charge of iron furnaces and foundries, report success from what would seem its reckless employment. One writer reports the case of a man who fell into a vat of boiling beer, and was placed in a bathtub full of saturated solution of picric acid, with the result of a complete recovery.

Picric acid dissolves but sparingly in water. A surgeon in charge of the medical department of a large iron furnace told me he kept a large quantity of a saturated solution on hand, and as soon as the burned surface could be exposed, and, if necessary, cleansed, he covered it with several thicknesses of lint wrung out of this solution. Once in every day the outer layers of lint were removed, but care was taken not to disturb that next to the skin unless it was free from adhesions. New lint was laid over the remaining layer, and thoroughly wet with the solution. Thus the burn was allowed to heal without exposure, and the result was more satisfactory than that of any other plan he had tried.

The addition of alcohol to the solvent enables it to take up more of the acid proportionately. Two drachms (8.0 gm.) of the acid, two ounces of alcohol, and sufficient water to make two pints (946.35 c.c.) affords a solution that can be kept in the office ready for emergencies.

Under certain circumstances, rarely combined unless on purpose, picric acid is a powerful explosive, hence it is perhaps better to keep the solution on hand than the crystals.

ACACIA.

Acacia, or gum Arabic, is principally used as an emulsifier, mucilago acaciae, mucilage of acacia being the official form which is most convenient for the purpose. Different oils require unlike quantities of the mucilage as an emulsifier. It is generally practicable to order half a fluidounce (15.0 c.c.) to each ounce of oil, but it requires a little over an ounce (30.0 c.c) to emulsify that quantity of balsam copiaba. It is sometimes used as a paste, but its great liability to fermentation should, in such cases, be obviated by adding a quantity of boric acid or a grain or two of chinosol to the water.

TRAGACANTH.

Tragacanth is demulcent and has been used as food. It contains but little nutrition. Its principal usefulness is as a mucilage for the suspension of insoluble powders. It is not used as an emulsifier on account of its slight solubility in water. Its mucilage, which is official, is an excellent paste, but should be protected from fermentation by boric or carbolic acid, or a few drops of formalin. One of the best skin dressings for softening the hands, relieving irritation and protecting against chapping is prepared as follows:

℞ Mucilaginis Tragacanthae .....
.....Fluidounce s.s. (15.00 c.c.)
Petrolati Liquidi Albi...Fluidrachm I (4.0 c.c)
Zinci Oxidi.....Drachm I (4.0 gm.)
Misce bene et adde
Aquae Purae.....Fluidounces IV (120.0 c.c)
Acidi Borici.....Grains XXX (2.0 gm.)
Formalin .....Drops X (0.16 c.c.)
Extract of Carnation Perfume.....20 drops

Rub well together to the consistency of cream, adding more water if necessary. Label skin dressing. Apply with gentle rubbing.

The mixture is a white, fragrant, soothing application, and is entirely absorbed by the skin, leaving it soft and smooth.

Though emollients are not prescribed as often

now as in the past, there is no denying their usefulness when properly employed. Often their use or non-use decides what shall be the character and result of local lesions, saving the patient from hours of pain and hastening resolution. The glycerole of quinin above described promises to be a very valuable addition to our therapeutic resources, and the ability to make a good flaxseed poultice should be one of the requirements in every professional nurse.

CORRESPONDENCE

THE HYPODERMATIC ADMINISTRATION OF QUININE.

Chattahoochie, Fla., May 31, 1914.

Editor Southern Medical Journal:

I have been much benefited and interested in the recent publication of the symposium on malaria in the last edition of the Southern Medical Journal. There seems to have been the usual diversity of opinion as to the means and quantity of quinine administration. I am particularly interested in the question of quinine medication in those cases of idiosyncrasies; and without doubt there are patients who cannot take quinine by mouth. A statement that the drug should be given regardless of its untoward effect in my experience would result in a condition of acute maniacal excitement following unusual agony from the skin symptoms that have been most properly called by the patients, "mad itch."

In my own personal experience, extending over a period of several years, I have encountered a number of cases that could not take quinine by the mouth. I have found that these patients can take the drug without the slightest discomfort by the hypodermic method. In the beginning I used ordinary bimuriate with urea, usually prepared by adding the salt to boiling water. This method was fairly satisfactory. The stock quinine tablets for preparing quinine hypodermics were used also, but with numerous abscesses following. It occurred to me that an ampoule of quinine solution would be a valuable addition to one's medical armementarium, and with this idea in mind I suggested to Eli Lilly & Company that they prepare and market ampoules of quinine bimuriate with urea, fifteen and one-half grains to a dose. This they declined to do as the idea was a new one to them, but they did manufacture five hundred such ampoules as a private formula. These were used in our work at the Florida Hospital for the Insane, with the exception of a few of the ampoules which were given to nearby physicians. The order for five hundred ampoules was given a second time and these were used and then the firm above mentioned marketed the ampoule. At the hospital we have used gross after gross of these ampoules in case after case of malaria wherein the diagnosis had been established by microscopic means, and in many cases it has been given for different therapeutic purposes and again in many cases of apparent malaria without blood examination. The firm of Eli Lilly have sold thousands and thousands of these ampoules and they have been used with marked success. The solution is furthermore concentrated (15½ grs. to 1 C. C.) and there have been practically no abscesses when the vast number of injections is taken into consideration. One case of tetanus developed after one of these injections, but the patient was a plumber and steamfitter who had numerous abrasions, and it is impossible to charge the quinine injection with having caused the tetanus. I have given as much as one hundred grains of quinine hypodermatically in one day, bearing in mind that the salt is absorbed slowly and in order to get the rapid effect dividing the dosage into a great number of injections. My colleague, Dr. A. E. Conter, gave a twelve-year-old girl sixty grains in one sitting after a microscopic diagnosis of pernicious malaria. Recovery was complete and no abscesses present.

So the proof of the pudding is in the eating. My personal experience is that quinine hypodermatically is an ideal method of administration and in at least four cases that I recall definitely the hypodermic administration of the drug avoided the fearful and distressing skin symptoms that had always existed after quinine by mouth.

Very respectfully,

R. N. GREENE,

Chief Physician, Florida Hospital for the Insane.

THE CONVERSATION OF THE PHYSICIAN—A DOSE OF WHAT DAD THINKS.

My Dear Son: I have often thought I would like to write a book on what a doctor should do and how he should do it, for I would be, like all

the men who write, able to give far better advice than any I have ever taken. In this one thing, the way a doctor should talk, which means the words he should use and the way he should use them, whether he should speak with a loud voice or a low and gentle one, and whether he should show that he is conscious of the elevation from which he addresses the person to whom he speaks, and also the contents of his words, the average physician needs advice and lots of it.

When you were home the last time, and we had that little supper for you, I noticed how you seemed overawed by the resounding words of Dr. Perkus, and how, after he finished, and the much more sensible ideas you gave us began to come out, you could hardly think of what you had to say because of the rolling and sonorous sentences which had preceded yours. I have known Perkus for thirty years of practice, and I have watched his rise in the medical world from a little, unknown man to that of a celebrity, and I can truthfully say that it has all been due to his talk. He early learned that if he said anything in the common words of the every-day speech of those to whom he was talking, the effect was not as good as if he put what he had to tell into a larger container, and used the biggest words he could find in his verbal arsenal. If he was called in consultation his habit was to talk to the other physician in the most technical terms he could think of, and to the family the talk was a mass of Latinized fireworks. A case of milk-crust always became in his hands one of eczema capitis; a case of indigestion was labeled "borborygmus intestinalis;" the common tick of the Southern woods and fields, in his talk, became the "Ornithodorus megnini." It has always seemed to me that the bite of that miserable pest has been ten times as malignant since I heard him use that term once in a consultation where a small boy had a sore on his leg from a tick bite. It has been said, by a loving sister-in-law of his, that he once took a memory course in order to be able to remember the words he thought necessary to use. And now, about the time she said it, there was a sudden and most startling change in his manner of talking. He was a very young doctor then, and he has been learning words ever since, until now he is well supplied. I do not think he has ever forgotten one, so the system he studied was surely good and well worth the cost and the trouble. I have not noticed any change in his therapeutic knowledge, nor any in the way he handles the cases that come to him. I do not think his ability to practice has been increased as much as one would think by this line of study, but neither do I think it has been hurt by it, and, surely, had he not been gifted in the use of apt and big words, and the impressiveness of his conversation increased by the use of the largest terms thinkable, he would never have gotten to the top nor anywhere near to it.

The effect this faculty has on your brother-physicians is, of course, very irregular. To some it is like a red rag to a bull, and develops all the feelings of disgust that can be raised by any line of action. To some it seems to show a depth of learning which far transcends the ordinary, and to these the polysyllabic talker appeals as a consultant of the most valuable type, for he can impress the patient and satisfy that craving for distinction which belongs to the human heart. To have a dear one die of any ordinary disease is ten times as sad as if he or she goes out in the golden chariot of a rolling and impressive name, and Perkus stands ready to supply, for all the profession in this district, the needed terms. It's a gift that can be easily cultivated; think in big terms and you will soon use them in your daily speech, and when writing cast aside the words which have less than six letters. A book of synonyms, well used, is worth its weight in gold. And the habit of going over a dictionary frequently is one that you should cultivate carefully.

An unabridged dictionary is a blessing to a man who learns to use it as he should, but the medium-sized medical dictionary is the best for most physicians. After one has gone up in the various degrees of greatness, ascending from the best-known doctor in his home town to the next degree, that of the best known in his State, he can only take the third, or last, degree out of the largest and latest of the unabridged. If you would be the widest and most-known of American medical men, attaining the third degree, and, perhaps, some accidental and incidental degrees besides, you must give your days and nights to the consistent study of the methods of learning words and of using them so as to make the most profound impression. If you cannot talk, tell a good story in the finest way it can be told, make a speech on any subject at any time on a minute's notice, your education has not done its work, and you must be content to see yourself, the less verbose man, take a back seat, while the more gifted takes the high prizes. These things are, of course, exaggerations, for we all know that the truly great doctor is one who sometimes gets in the path of recognition and so gets a share of glory while considering it the least of his honors; who is great

because he has done some great thing for the human race without thought of the money in it or the huzzas of the world.

Then, in the matter of such conversation as a doctor must have with his fellow-man on all the various things of life, there must, or at least should be, a consideration of the way in which you talk and the things you say. If a doctor could say only words of worth he would do more to keep the profession in high repute than he could in any other way. The curing of the sick is looked on as part and parcel of the things a physician is more or less bound to do; but the talk he indulges in is somewhat outside the expected and necessary, and so makes a deeper impression if it is worthy of consideration at all. It does not strike me as necessary that a man should always talk as if on exhibition, or as if he felt the serious importance of his opinions to the world around him, but he should talk in a sensible manner and the very tones of his voice should have due consideration. To have an impressive appearance and then to have with it a voice thin and piping with unexpected fluctuation of volume and force, means a sure and certain loss of effect. I once knew a railroad president who would ask you to pass the butter, at a picnic, in a voice which would have done credit to the most sonorous of Daniel Webster's sentences. This was a waste. But to have piped up in a double treble and asked the same would have shown him to be unfit for the high place he occupied in the business world.

In conclusion, there is one thing to be always remembered, and that is that a doctor should be a thinking being, not a mere bag of remembered teachings. He should think, think, think; and he should know that the power to use his brain in thinking is the one he must always strive to acquire, to retain and to make more perfect. The man and all he is should be shown in the way he talks, and it always is; and as he thinks so he talks.

I have known doctors who could not talk to other doctors, and I have wondered at it. If a man is full of the business of his life I should think he would talk of it to those most interested in similar lines of thought.

But this brings up another train of thought, and I will close, remaining as ever,

Your own old dad,

HIPPOCRATES PLUM, M.D.

BOOK REVIEWS

A System of Surgery. Edited by C. C. Choyce, B.Sc., M.D., F.R.C.S.; and J. Martin Beattie, M.A., M.D., C.M. Three large octavo volumes, profusely illustrated with hundreds of half-tones and line drawings and many colored plates. Bound in Interlaken book cloth. $7.00 per volume, $21.00 per set. Funk & Wagnalls Company, 354-360 Fourth Avenue, New York.

The first two volumes of this system have already been reviewed in this Journal.

The third volume consists of excellent monographs on the cardio-vascular system; lymphatic system; neck; air passages; nerves, brain and cord; bones; joints; etc.

The three volumes form a most excellent system of surgery, especially from the diagnostic and pathologic standpoint, and represent the latest and best work of the English surgeons.

The general practitioner and surgeon alike will find much of excellence in the work. The illustrations are beautiful and with the excellent typework add greatly to the value of the volumes.

Diagnostic Methods.

Second Edition Revised. By Herbert Thomas Brooks, A.B., M.D., Professor of Pathology, U. of T. College of Medicine, Memphis, Tenn. 82 pages. Cloth, $1.00. C. V. Mosby Co., St. Louis, Mo., 1914.

A valuable little manual, containing the more essential and reliable tests, abbreviated to suit the wants of the student, interne and practitioner, who have very limited time to devote to laboratory work.

The Junior Nurse.

By Charlotte A. Brown, R.N., Instructor in the Boston City Hospital; Graduate of the Boston City Hospital and Boston Lying-in Hospital Training School for Nurses; late superintendent of the Hartford Hospital Training School, Hartford, Conn. 12mo, 208 pages, illustrated. Cloth, $1.50 net. Lea & Febiger, Publishers, Philadelphia and New York, 1914.

This is an instructive and practical book for the junior nurse and will make her more valuable to the physician, if he will follow its directions. It would not be a waste of time for the graduate nurse also to read it and note the many valuable suggestions for making the day's work easier and herself more efficient.

Surgery: Its Principles and Practice.

For Students and Practitioners. By Astley Paston Cooper Ashhurst, A.B., M.D., F.A.C.S., Instructor in Surgery in the University of Pennsylvania; Associate Surgeon to the Episcopal Hospital; Assistant Surgeon to the Philadelphia Orthopedic Hospital and Infirmary for Nervous

(continued on adv. page 20.)

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THOMAS L. DAGG, M. D., Director Pathological Department.
C. CHURCHILL CROY, M. D., Director Bacteriological Department.

(Continued from Page 596.)

Diseases. Handsome large octavo, 1141 pages, with 7 colored plates and 1,032 illustrations, mostly original, in the text. Cloth, $6.00 net Lea & Febiger, publishers, Philadelphia and New York, 1914.

The author has wisely laid stress upon the descriptions of repair, inflammation, infecting organisms, tumors and the indications for surgical intervention. These fundamental principles have been clearly presented. A description of at least one of the recognized methods of surgical procedures for each of the usual operations has been included, which, in conjunction with the large number of excellent drawings and illustrations, make this a most valuable publication.

A Treatise on Diseases of the Skin.

For the use of Advanced Students and Practitioners. By Henry W. Stelwagon, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Seventh edition, thoroughly revised. Octavo of 1,250 pages, with 334 text-illustrations and 38 full-page colored and half-tone plates. Philadelphia and London: W. B. Saunders Co., 1914. Cloth, $6.00 net; half Morocco, $7.50 net.

This is a most exhaustive single volume, treating upon diseases of the skin. Its three hundred and sixty-seven illustrations and plates, together with the text, combine as much useful information as could be conveniently included in one volume. This seventh edition includes the results of the latest conclusions on such important subjects as syphilis, leprosy, pellagra and ringworm; and in addition, contains descriptions of the recently acknowledged dermatologic entities—prurigo nodularis, granuloma pyogenicum, benign sarcoid, and keratosis blenorrhagica.

Surgery; Its Principles and Practice.

By various authors. Edited by William Williams Keen, M.D., LL.D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. VI. With 519 illustrations, 22 of them in colors. Philadelphia and London. W. B. Saunders Co., 1913. Price, $7.00.

This is the most valuable volume in the system. The authors, with one or two exceptions, cover the subjects which were treated in the previous volumes, and in the present instance give us the last and best knowledge that is at their command in a field in which they primarily are illustrious. While in a way it corresponds to an annual, it is different and better, for the authors do not merely abstract what literature has appeared since their original articles were written, but use their ripe judgment in selecting what is best. There have been new departments of surgery opened up in the past seven years, notably thoracic surgery, which is covered by several excellent chapters, one particularly on intratrachael insuffiation. Inasmuch as all the subjects covered in the original work are brought up to date in this volume, it would be an endless task to attempt to comment on the individual chapters, but the interest that one finds in each is much greater than in the original volumes, or in any collective abstract dealing with these subjects.

Medical Gynecology.

By S. Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital. Third Thoroughly Revised Edition. Octavo of 790 pages, with 150 original illustrations. Philadelphia and London: W. B. Saunders Co., 1914. Cloth, $5.00 net; half Morocco, $6.50 net.

There is an extensive field of usefulness for just such a book, since every gynecological case should have the benefit of general medical and local treatment before operative procedures are advised. The author has considered the subject from various viewpoints and has advised only those therapeutic measures which in his large experience have proven valuable. The functions of the various ductless glands, their physiological relationship to each other, the pathological changes likely to occur in each and the complex symptoms produced are exhaustively discussed in a way that will repay the searcher after information. It is a treatise that will be of great assistance in a puzzling case.

The Principles and Practice of Modern Otology.

By John F. Barnhill, M.D., Professor of Otology, Laryngology and Rhinology, Indiana University School of Medicine, and Ernest deW. Wales, B.S., M.D., Clinical Professor of Otology, Laryngology and Rhinology, Indiana University School of Medicine. Second edition revised. Octavo of 598 pages, with 305 original illustrations, many in colors. Philadelphia and London: W. B. Saunders Co., 1911. Cloth, $5.50; half morocco, $7.00, net prices.

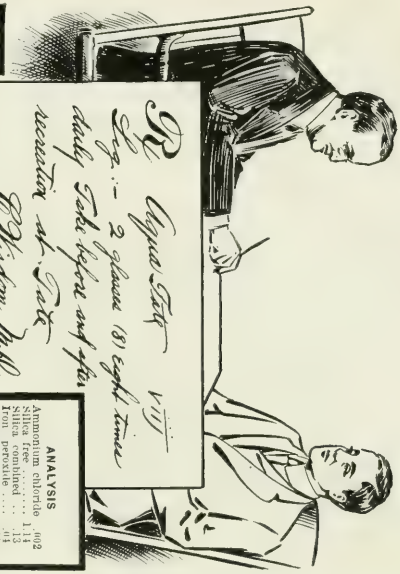
Barnhill has issued a second edition of his book, his aim being to modernize the subject of otology. Not many extensive changes from the former edition have been made. Among the most important are the following: The chapter on the examination of the functions of the ear has been entirely rewritten and includes the description and formula of a uniform system of tests accepted by the eighth Otologic Congress at Budapest in 1909; a more extended statement regarding operative injury of the facial nerve; a description of the conservative radical mastoid operation commonly known as the health operation, and several paragraphs relative to symptoms, pathology and surgical treatment of labyrinth suppuration.

Structures and Functions of the Body.

A Handbook of Anatomy and Physiology for nurses and others desiring a practical knowledge of the subject. By Annette Fiske, A.M., graduate of the Waltman Training School for Nurses. 12mo. of 221 pages, illustrated. Philadelphia and London: W. B. Saunders Co., 1911. Cloth, $1.25 net.

Structures and Functions of the Body, by Fiske, is a small volume of about 200 pages dealing with the physiology and anatomy of the human body.

(Continued on adv. page 22.)



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(Continued from page 20.)

It is designed especially for nurses, to impart the knowledge of physiology, at the same time that the anatomy of the part is taken up.

The subject-matter is well written and illustrations are used to facilitate the text. The criticism we would make is that the volume is rather too small and the contents too meager for such a broad subject.

Surgical After-Treatment.

By L. R. G. Crandon, Assistant in Surgery at Harvard Medical School, and Albert Ehrenfried, M.D., Assistant in Anatomy at Harvard Medical School. Second edition, practically rewritten. Octavo of 831 pages, with 264 original illustrations. Philadelphia and London: W. B. Saunders Co., 1912. Cloth, $6.00 net; half morocco, $7.50 net.

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What to Eat and Why.

By G. Carroll Smith, M.D., Boston, Mass. Philadelphia and London: W. B. Saunders Co. Price, $2.50.

If we were asked to recommend a book that contains the sanest advice to all food faddists we would without hesitancy mention Dr. Smith's book, for throughout it there is repeatedly shown that the authors' mind is of a decidedly normal calibre, and that having heard so very much on the subject of what one ought or ought not to eat he knows how to avoid the really ridiculous theories that have been put forth, not only by laymen, but by supposedly well-informed medical men. In nearly all the books on this subject which have lately come to our desk, there has been a tendency on the part of the authors to drift too readily into the role of food faddists; and though the books had some points worth while, the reviewer soon lost all interest in them on account of this defect. But Smith has avoided these pitfalls and assembled in one fine work all the essentials of proper dietary knowledge.

Health and Longevity Through Rational Diet.

By Dr. Arnold Lorand, Physician to the Baths, Carlsbad, Austria. Author of "Old Age Deferred." Practical hints in regard to food and the usefulness or harmful effects of the various articles of diet. Translated from the German edition. Philadelphia: F. A. Davis Co., Publishers. A complete code of instructions as to the different foods and how they can be best employed. Octavo. 425 pages, handsomely bound in cloth. $2.50 net.

The great importance assigned by the public to matters of diet is evidenced by the demand that exists for the numerous publications on the subject. Among them the book under consideration takes high rank. It is written by a man of great experience, close observation and unusual literary talent. Few physicians have greater opportunities for witnessing the evil results of errors of diet than the Carlsbad practitioner. We cannot do better than recommend this work as a safe guide for physician or patient on a subject so often neglected and so vitally important. It is intensely practical in its details. For instance it compares the results of a diet of fruit, vegetables, cereals, milk, fish and meat as distinguished from each other, speaks of the injurious effects of the table d'hote diet, and gives some hints to those who are obliged to take their meals in restaurants. Lack of space forbids further comment beyond the statement that we cannot recommend this book too highly.

SOUTHERN MEDICAL NEWS

ALABAMA.

At Mountain Creek, the light epidemic of smallpox has about disappeared. The Confederate veterans were limited to the Soldiers' Home during the scare for safety.

Dr. Earle Drennen, of Birmingham, has been appointed surgeon of the Alabama Great Southern Railroad for the Birmingham territory. He succeeds the late Dr. B. G. Copeland.

At Greenville, Drs. Orr and Fazier, of the State Board of Health, conducted a health campaign in Butler County in May, during which they visited the schools in different parts of the county.

At Guntersville, in May, a gentleman presented a check at the bank, and being unknown to the cashier, authorized him to telegraph inquiry to the bank at Union Grove. The reply came promptly that the gentleman's financial standing was all right, but that he had smallpox and was wanted by the officials, to be isolated. The cashier promptly returned his check and invited him to step outside. He was finally provided with an improvised pesthouse and an immune negro to serve him.

General J. B. Scully, of the National Guard, has received notice at Montgomery that the War Department has indefinitely postponed the medical school for National Guard officers which was to have been held in June at Fort Oglethorpe, Ga.

FLORIDA.

At Orlando, May 14, the State Medical Association elected the following officers for the ensuing year: President, F. Clinton Moor, Tallahassee; First Vice-President, C. D. Christ, Orlando;

(Continued on adv. page 24.)

The B-P Abdominal Supporter

Made to measure—not a stock affair.

A new idea—cool—comfortable. Fits perfectly. Does not slip. A support—not a compress. No long wait. Indicated in

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Obesity
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We Make a Special Support for Entero-optosis

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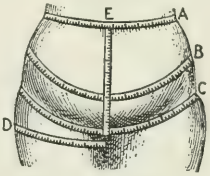

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E—Height.

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American Medical Directory

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Medical Graduation The educational qualifications — proven from alumni records.

Society Membership The indication of professional activities—from secretaries' records.

Specialties Personal preference in practice —data furnished by the physician himself.

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PRICE $10.00

American Medical Association

535 N. Dearborn St., Chicago, Ill.

(Continued from page 22.)

Second Vice-President, Thomas Truelson, Tampa; Third Vice-President, J. A. Simonson, Arcadia; At this meeting provision was made for the publication of a Journal of the State Association with the Secretary-Treasurer as editor and manager. Secretary-Treasurer, G. E. Henson, Jacksonville.

At the same place the wives of the physicians of Orange County gave a picnic luncheon to the wives of the visiting physicians. The entertainment was at the Country Club, to which the guests were conveyed in automobiles.

GEORGIA.

Dr. Buford Crosby Bird, of Colquitt, was married to Miss Chevis Evans Strong, of Montgomery, Ala., on June 17.

At Atlanta, Grady Hospital has opened its pay wards to patients of all reputable physicians in the city. Extensive additions and improvements are contemplated.

The Savannah Press announces the election of the following named officials of the surgical staff of the Central of Georgia Railway: President, H. B. Disharoon, Roanoke, Ala.; First Vice-President, O. D. Addison, Raymond, Ga.; Second Vice-President, W. C. Howell, Dothan, Ala.; Secretary-Treasurer, W. E. Saunders, Arlington, Ga.

At a meeting of the Macon Medical Society a communication was addressed to the Mayor and Council and County Commissioners urging them to see that better care and attention is afforded to patients with pellagra and tuberculosis. Dr. R. H. Stovall, the Secretary, stated that neither the Macon Hospital nor the Roff Home will take in poor patients suffering with these diseases.

At Bainbridge, Dr. A. W. Wood, of the State Board of Health, announced that in Decatur, out of 1,188 children examined for hookworm, all but eight were found infected.

At the recent annual session in Atlanta of the Georgia Medical Association Dr. W. B. Hardman, of Commerce, was unanimously elected President of the association.

According to the Rome Herald, the construction of public sewers and the organization of an efficient sewerage system has resulted in the lowest death rate the city has known for ten years.

The Lowndes County Medical Association has requested the State Board of Health to furnish the various counties the money appropriated to buy diphtheria anti-toxin instead of supplying the anti-toxin itself. They claim they can have the doses so proportioned as to produce better results.

Examinations of the pupils in the Atlanta public schools show that nearly half the pupils had physical defects, 70 per cent of which were bad teeth.

At the commencement of the Medical Department of the University of Georgia there were twenty men in the graduating class, seventeen of whom were from Georgia, two from Florida and one from South Carolina. The exercises were held at the Grand Opera House.

KENTUCKY.

The Woman's Club of Mayfield and the Mayor and City Council, together with the Board of Health and the Health League, combined their forces on May 6 and 7 and cleaned up the city from one end to the other.

At Corydon, in the middle of May, the churches, Sunday schools and other schools were closed on account of the prevalence of smallpox. General vaccination was inaugurated and the disease was soon under control.

At Hodgenville, Dr. M. W. Steele, of Bowling Green, representing the State Board of Health, treated hookworm cases for three days, during which time he made 114 examinations and found forty-three cases of the disease.

At Louisville, on May 16, Dr. Michael P. Stoltz, aged 98, died of heart disease after an illness of eight weeks.

The city of Henderson has been advised by Health Officer Griffin that the waters from the six city wells of Henderson have been examined bacteriologically for sewage pollution and found entirely free therefrom. He pronounces them safe for domestic usage.

The tenth annual session of the Kentucky State Association of Railway Surgeons convened in May at the Seelbach, in Louisville, Dr. D. Yandell Roberts presiding. A committee was appointed to confer with the heads of the various railroads operating in Kentucky to provide for the better care of injured persons by stationing "hospital cars" at various points ready for instant service. The following were elected officers for the ensuing year: President, J. V. Prewitt, West Point; Vice-Presidents, J. W. Fitzpatrick, Middlesboro, and H. P. Cartwright, Bowling Green; James B. Kinnaird, Lancaster, Secretary.

MARYLAND.

Dr. J. W. Humrichouse, of Hagarstown, was elected President of the Medical and Chirurgical Faculty of Maryland. The other officers elected for the ensuing year are Alexius McGlannan, J. E. Deets and R. E. Lee Hall, Vice-Presidents; W. S. Gardner, Treasurer; John Ruhrah, Secretary.

At River Springs, St. Mary County, Dr. Richard Pinckney Blackistone died May 14, aged 92 years. His health had been good until a few weeks before his death.

At the Home for Widows and Orphans of Physicians, 1615 Bolton street, Baltimore, on the 22d day of May, died Dr. J. C. Shimer, in his seventy-sixth year. He served as surgeon in the Federal army during the Civil War.

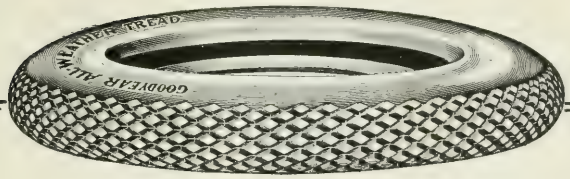
At a meeting of the Baltimore City Medical Society, May 16, announcement was made of an agreement between the members and the press of the city that in future they should co-operate to present to the public all the medical news of general interest in authentic form. The names of none of the medical men co-operating will be published.

In Washington the young men graduating from the Army Medical School received their diplomas June 1. There were sixteen graduates, two of whom were from the Southern States.

MISSISSIPPI.

At the April meeting of the Mississippi State Medical Association at Columbus several of the

(Continued on adv. page 26.)



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Five Ways in Which Some Men Get It

Way One is by paying too much for a tire. Sixteen makes now sell at more than Goodyear prices—many at one-third more.

Yet Goodyears lead in Tiredom. They offer costly features found in no other tire. Their under-price is due to matchless output. And that is due to matchless popularity.

Way Two is by buying tires that rim-cut. In such tires, this one trouble ruins one in three. No-Rim-Cut tires can't rim-cut. That we guarantee.

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Way Four is through loose treads. In No-Rim-Cut tires, through a patent method, we reduce this risk 60 per cent. No other maker does this.

Way Five is through wasteful anti-skids. The All-Weather tread—used on Goodyears alone—is tough and double-thick. It is flat and smooth-riding, like a plain tread. It doesn't center the strains on small parts of the fabric. It grasps with a bulldog grip.

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You know that Goodyears outsell any other tire. You know that men are flocking to them, for you see them everywhere.

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Then, in fairness, try the Goodyears. Learn why they hold top place. Any dealer can supply you Goodyears.

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(1655)

(Continued from advertising page 24.)

members who were graduates of the University of Tennessee, the University of Nashville, the College of Physicians and Surgeons and the Memphis Medical College formed an alumni association. These institutions are now consolidated as the Medical Department of the University of Tennessee. There are about thirty members. Dr. F. J. Underwood, of Nettleton, is President, and Dr. B. J. Marshall is Secretary.

The Delta District Medical Association, composed of the counties of Leflore, Issaquena, Washington and part of Sunflower met at Greenville in May for the discussion of papers. The next meeting will be at Greenwood early in August.

At the May meeting of the Hines-Rankin Medical Society at Vicksburg several important papers were read and discussed. The meeting was held in the Jackson Board of Trade rooms and was well attended.

NORTH CAROLINA.

At Greensboro early in May a case of smallpox eruption was found on a member of the Guilford County grand jury. County Superintendent of Health, Dr. W. M. Jones, was immediately called upon to vaccinate the other members of the grand jury who were not immune, as well as several of the county officials who had been exposed.

The State Board of Health is issuing special bulletins on sanitary subjects. At Charlotte the public is invited to call at the health office to secure them.

An Annapolis early in May a severe epidemic of smallpox was developed and compulsory vaccination of all citizens was enforced. The epidemic was soon stamped out. Between 2,500 and 3,000 were vaccinated, as in the neighboring town of Concord hundreds of others were similarly treated.

At Southport more than two hundred school children were treated with anti-typhoid serum and many of the adults also submitted. Wilmington, which has in the past suffered much from typhoid, has arranged for the free inoculation of every citizen.

At Wilmington on May 7 Dr. David William Bullock died at his home, No. 309 North Fourth street, of typhoid fever. He was a man of great usefulness and influence.

Announcement is made by the State Board of Health that Dr. W. P. Jacocks has been appointed to succeed Dr. C. L. Pridgen as manager of the hookworm work in North Carolina, the order to take effect June 1.

Charlotte has just completed her first year's use of Catawba River water and the new million-dollar installation of their water system.

Dr. W. C. Ashworth, of Greensboro, sailed for Europe on June 13 for the purpose of atending the neurological clinics in the leading European cities.

OKLAHOMA.

At Oklahoma City, May 2, Dr. Frank B. Sorgatz and Miss Vere Van Winkle were married at the residence of the bride's parents, Rev. Dr. Phil C. Baird officiating. The doctor is a graduate of the Northwestern University and teaches in the Medical Department of the University of Oklahoma.

Twenty-eight cases of hookworm were found among fifty students of the Armstrong Male Indian Academy, at Tulsa, by W. P. Jacocks, of the Rockefeller Commission. Traces of three other worms were also discovered.

At Coweta, Dr. O. P. Huston was found dead in his barn May 8. He had apparently fallen from the loft and broken his neck.

At Guthrie, May 13, the Oklahoma State Medical Association closed its twenty-second annual meeting. The following officers were elected for the ensuing year: President, J. W. Reilley, Oklahoma City; Vice-Presidents, Chas. R. Hume, of Anadarko, and W. Albert Cook, Tulsa; Secretary-Treasurer, Claud A. Thompson, Muskogee. The next meeting will be at Bartlesville. Nearly three hundred doctors were present.

At Oklahoma City, the health officials report that five out of seven dairies they examined were found so unsanitary that the milk was unfit for human consumption.

TEXAS.

At the regular annual session of the Texas State Medical Association, held at the city of Houston in May, over one thousand doctors were in attendance. The lecture to the public was delivered by Dr. Isadore Dyer, of Tulane University, and was devoted to public health and the avoidance of preventable diseases. A special meeting was devoted to the memory of members deceased during the past year, twenty-two in number. The eulogium was pronounced by Hon. Leon Sonfield. Dr. Frank D. Boyd, of Fort Worth, was unanimously elected President for the ensuing year, and Drs. G. T. Hall, L. H. Reeves and K. H. Beel, Vice-Presidents.

At Houston, City Health Officer Charles C. Green has ordered that no roller towels be found for public use and that individual or paper towels be supplied by hotels and other public toilets. The city market has been supplied with new screen vestibules and doors. In some instances Dr. Green has reported butcher stalls and fish markets for offering spoiled provisions for sale. Beginning June 1, all bread offered for sale must be securely wrapped. The presence of several cases of typhoid in the city has directed public interest to the protective vaccination and scores of people have used it. It has been decided that neither the milk nor the water was the carrier of the germs.

The Governor has appointed Dr. E. M. Wood, of Williamson County, to the State Board of Medical Examiners, in place of Dr. J. H. Evans, deceased.

At Fort Worth all the practicing physicians in the county have been appointed on the staff of the joint City and County Hospital, thus enabling them to visit their patients at the hospital.

At Dallas, Dr. J. S. Turner has called the attention of the City Commissioners to the way careless anglers are throwing fish too small for food out on the banks of the big reservoir to die and pollute the water. He wants them returned to the water to destroy mosquito larvae and to grow. The County Commissioners' Court has appropriated three hundred dollars to assist in the fight

(Continued on advertising page 28.)

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(Not one room, but one hundred of them.)

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(Continued from page 26.
against hookworm. In the city proper during the last year the deaths exceeded the births to the number of 658.

At San Antonio, Dr. J. F. Hines was tried before the Federal Court on a charge of wrongfully using the United States mails. He was convicted and faces a jail sentence.

Deaths—Dr. O. I. Halbert, Waco; Dr. F. E. Daniel, Austin; Dr. Felix B. Bramlette, Austin.

VIRGINIA.

The Fredericksburg Journal relates that unaware that the prison at Occuquan, Va., had smallpox among its inmates, Commissioners Newman, Siddons and Harding and Governor Goldsborough, of Maryland, with other officials, visited the workhouse one day in May. Later they found that several of the 200 inmates were suffering with smallpox at the time of their visit.

At Parkersburg great success has attended the use of the anti-typhoid vaccine and it is planned to lower the price of the sets of three doses ready for use to 60 cents per set. Dr. R. A. Martin, of the local Board of Health, advises that the three vaccinations necessary should be administered only by a physician.

At Norfolk, the Virginia Society for the Study and Prevention of Malaria has issued a booklet entitled, "Seven Lessons on Malaria," for the use of pupils in the public schools. The society offers a series of prizes, ranging from one to twenty dollars, to the pupil whose notes on the lesson are considered best by the committee of school teachers and doctors.

At Staunton, Surgeon Taliaferro Clark, of the United States Public Health Service, is examining the children in public schools for trachoma. The doctor found but few cases in Staunton, but stated that in the mountain regions of the state he had found over 8,000 cases so far.

At Richmond, Dr. George Ben Johnston, formerly Dean of the Medical College of Virginia, has been appointed by Governor Stuart a life member of the board of Visitors of the Medical College of Virginia.

At Henderson, a colored visiting nurse has been employed by a colored health league. Her name is Beatrice Lewis and in the three weeks of her service she has made 118 calls and been of immense benefit to her people. Such a nurse is needed for such services more than any white nurse.

At Richmond, May 7, Dr. H. Cabell Tabb, an old Confederate surgeon and a popular physician, died at his home on Monument avenue. He was born in March, 1839.

The State Board of Health complains that the doctors do not appreciate the importance of making reports of births under the vital statistics law. According to the State Board of Health, there were 523 doctors in the state who failed to report a single birth during the year.

At Richmond, Chief Health Officer Levy quarantined the home of Mr. T. O. Landrum, East Grace street, on account of the infection of Mrs. Landrum with smallpox. So far as is known there was only one other case in the city.

WEST VIRGINIA.

At Terra Alta, the State Board of Control is planning for additions to the State Tuberculosis Hospital. Every room and ward is filled and there is a long list of patients on the waiting list.

At Wheeling, any citizens who dump their garbage and other refuse in the street are arrested by sanitary policemen for violation of the health laws.

Governor Hatfield has appointed Dr. M. V. Godbey, of Charleston, a member of the State Board for the Examination and Registration of Trained Nurses. He succeeds Dr. L. V. Guthrie, of Huntington.

At Nicelyville, the County Board of Health has ordered the McLain slaughter house to clean up immediately and operate the place in a more sanitary way.

The forty-seventh annual meeting of the West Virginia State Medical Association met at Bluefield May 13. A feature of the meeting was a series of contests between "first aid" teams from a number of large mining fields of the Norfolk & Western Railroad. About one hundred trained workers participated. The following officers were elected: Dr. Henri P. Linsz, of Wheeling, President; Dr. J. B. Kirk, of Elkhorn, First Vice-President; Dr. T. K. Oates, of Martinsburg, Second Vice-President; Dr. J. N. Houston, of Moundsville, Third Vice-President; Dr. J. Howard Anderson, of Marytown, Secretary; Dr. Hugh G. Nicholson, of Charleston, Treasurer.

At Wheeling, warrants were sworn out by Sanitary Officer A. E. Cameron against a citizen for permitting a vault to overflow and for disobeying an order to have it cleaned.

At Scarboro, Fayette County, Dr. W. W. Wingrove was charged before the State Board of Health with issuing prescriptions indiscriminately for cocaine and whisky to persons, some of whom were known as drunkards. His license to practice medicine and surgery was revoked for the period of one year.

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For Infants of any age

Mellin's Food
4 level tablespoonfuls
Water (boiled, then cooled)
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Give one to three ounces every hour or two, according to the age of the baby, continuing until stools lessen in number and improve in character.

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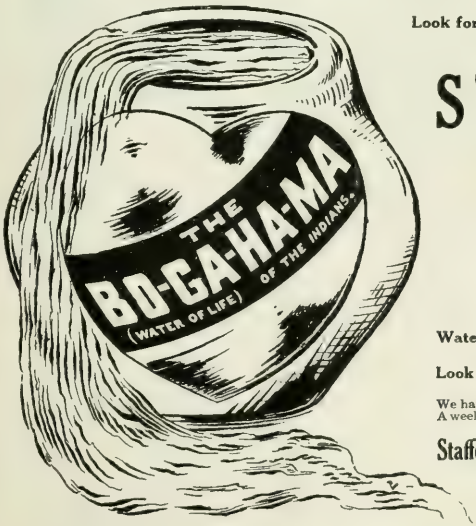

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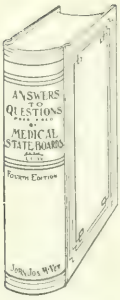

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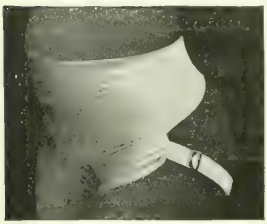

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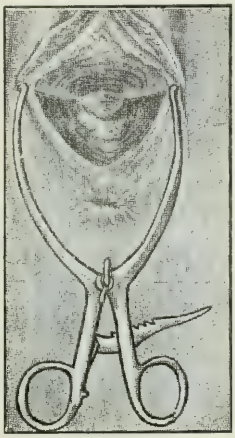

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